



# STIC Search Report

## EIC 1700

STIC Database Tracking Number: 150847

**TO: Dawn Garrett**  
**Location: REM 10D79**  
**Art Unit : 1774**  
**April 22, 2005**

**Case Serial Number: 10/786372**

**From: Usha Shrestha**  
**Location: EIC 1700**  
**REMSSEN 4B28**  
**Phone: 571/272-3519**  
**usha.shrestha@uspto.gov**

### Search Notes

Due to the broadness of structure on Claim 1 we couldn't able to do the search using that structure, so we used carbazole ring attach to aryl having conjugated group, to do the search.

Access DB# 150847

## SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: DAWN GARKETT Examiner #: 76107 Date: 4/17/05  
Art Unit: 1774 Phone Number ~~30~~ 2-1523 Serial Number: 101786372  
Mail Box and Bldg/Room Location: Rm 5110C79 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

\*\*\*\*\*

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Electroluminescent Devices Having Conjugated  
Aromatic Polymers  
Inventors (please provide full names):

SHIYING ZHENG, KATHLEEN VAETH, QUANG PHANEarliest Priority Filing Date: 2/25/2004

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Please search the polymer described  
in claim 1 and include specific groups described  
in the dependent claims within the  
search of the claim 1 polymer.

thank you

## STAFF USE ONLY

Searcher: usla

Searcher Phone #: \_\_\_\_\_

Searcher Location: \_\_\_\_\_

Date Searcher Picked Up: 4/21/05Date Completed: 4/22/05Searcher Prep & Review Time: 60Clerical Prep Time: 30Online Time: 120

## Type of Search

NA Sequence (#) \_\_\_\_\_

AA Sequence (#) \_\_\_\_\_

Structure (#) 2

Bibliographic \_\_\_\_\_

Litigation \_\_\_\_\_

Fulltext \_\_\_\_\_

Patent Family \_\_\_\_\_

Other \_\_\_\_\_

## Vendors and cost where applicable

STN# 529.67

Dialog \_\_\_\_\_

Questel/Orbit \_\_\_\_\_

Dr.Link \_\_\_\_\_

Lexis/Nexis \_\_\_\_\_

Sequence Systems \_\_\_\_\_

WWW/Internet \_\_\_\_\_

Other (specify) \_\_\_\_\_

=> fil reg

FILE 'REGISTRY' ENTERED AT 12:11:33 ON 22 APR 2005  
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.  
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.  
COPYRIGHT (C) 2005 American Chemical Society (ACS)

=> d his ful

FILE 'HCAPLUS' ENTERED AT 09:41:08 ON 22 APR 2005  
L1 2781 SEA ABB=ON PLU=ON ZHENG S?/AU  
L2 26 SEA ABB=ON PLU=ON VAETH K?/AU  
L3 41 SEA ABB=ON PLU=ON PHAN Q?/AU  
L4 0 SEA ABB=ON PLU=ON L1 AND L2 AND L3  
L5 4 SEA ABB=ON PLU=ON L1 AND L2  
D SCAN TI  
L6 0 SEA ABB=ON PLU=ON L1 AND L3  
L7 0 SEA ABB=ON PLU=ON L2 AND L3  
L8 1 SEA ABB=ON PLU=ON L5 AND DIARYLANTHRACENE?  
D SCAN  
D FHITSTR  
SEL L8 RN

FILE 'REGISTRY' ENTERED AT 09:45:22 ON 22 APR 2005  
L9 17 SEA ABB=ON PLU=ON (106-41-2/BI OR 128-08-5/BI OR  
164352-24-3/BI OR 18162-48-6/BI OR 18908-66-2/BI OR  
201733-56-4/BI OR 332083-42-8/BI OR 332083-43-9/BI OR  
332083-44-0/BI OR 358-23-6/BI OR 474310-99-1/BI OR  
500553-00-4/BI OR 500553-01-5/BI OR 500553-02-6/BI OR  
500553-03-7/BI OR 500553-05-9/BI OR 500553-06-0/BI)  
D SCAN  
L10 STR  
L11 STR  
L12 1 SEA SSS SAM L11  
D SCAN  
L13 SCR 1841 AND 1607  
L14 2 SEA SSS SAM L11 AND L13  
L15 455 SEA SSS FUL L11 AND L13  
SAV L15 GAR372/A

FILE 'HCAPLUS' ENTERED AT 11:24:27 ON 22 APR 2005  
L16 212 SEA ABB=ON PLU=ON L15  
D FHITSTR  
L17 87 SEA ABB=ON PLU=ON L16 AND (ELECTROLUM!N? OR ORGANOLUM  
!N? OR (ELECTRO OR ORGANO OR ORG#) (2A) LUM!N? OR  
LIGHT?(2A) (EMIT? OR EMISSION?) OR OLED/IB,AB OR  
LED/IT)  
L18 23 SEA ABB=ON PLU=ON L17 AND POLYMER?  
D FHITSTR  
D FHITSTR 2-5

FILE 'REGISTRY' ENTERED AT 12:04:08 ON 22 APR 2005  
L19 STR L11  
L20 15 SEA SUB=L15 SSS SAM L19  
L21 215 SEA SUB=L15 SSS FUL L19

FILE 'HCAPLUS' ENTERED AT 12:05:46 ON 22 APR 2005  
L22 110 SEA ABB=ON PLU=ON L21  
L23 40 SEA ABB=ON PLU=ON L22 (L) DEV?/RL  
L24 34 SEA ABB=ON PLU=ON L23 AND (ELECTROLUM!N? OR ORGANOLUM

```

!N? OR (ELECTRO OR ORGANO OR ORG#) (2A) LUM!N? OR
LIGHT? (2A) (EMIT? OR EMISSION?) OR OLED/IB,AB OR LED/IT)
L25      46 SEA ABB=ON PLU=ON L22 AND (ELECTROLUM!N? OR ORGANOLUM
!N? OR (ELECTRO OR ORGANO OR ORG#) (2A) LUM!N? OR
LIGHT? (2A) (EMIT? OR EMISSION?) OR OLED/IB,AB OR LED/IT)
L26      36 SEA ABB=ON PLU=ON L25 AND DEV?/RL
L27      36 SEA ABB=ON PLU=ON L24 OR L26
L28      9 SEA ABB=ON PLU=ON L18 NOT L27
          D L27 FHITSTR
          D L27 FHITSTR 2-5

```

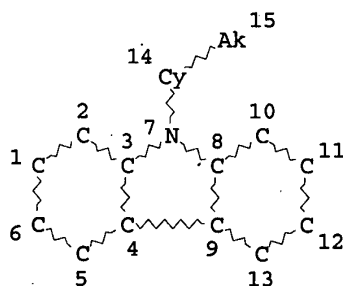
FILE 'REGISTRY' ENTERED AT 12:11:33 ON 22 APR 2005

FILE HCAPLUS

Copyright of the articles to which records in this database refer held by the publishers listed in the PUBLISHER (PB) field (available for records published or updated in Chemical Abstracts after Decem 26, 1996), unless otherwise indicated in the original publications. The CA Lexicon is the copyrighted intellectual property of the American Chemical Society and is provided to assist you in sea databases on STN. Any dissemination, distribution, copying, or st of this information, without the prior written consent of CAS, is strictly prohibited.

=> d que l22

L11 STR



NODE ATTRIBUTES:

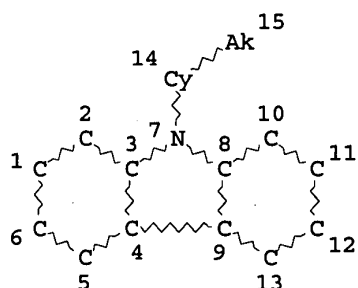
DEFAULT MLEVEL IS ATOM  
 GGCAT IS UNS AT 14  
 DEFAULT ECLEVEL IS LIMITED  
 ECOUNT IS M4 C AT 14  
 ECOUNT IS M2 C AT 15

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED  
 NUMBER OF NODES IS 15

STEREO ATTRIBUTES: NONE

L13 SCR 1841 AND 1607  
 L15 455 SEA FILE=REGISTRY SSS FUL L11 AND L13  
 L19 STR



## NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

GGCAT IS UNS AT 14

GGCAT IS UNS AT 15

DEFAULT ECLEVEL IS LIMITED

ECOUNT IS M4 C AT 14

ECOUNT IS M2 C AT 15

## GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 15

## STEREO ATTRIBUTES: NONE

L21 215 SEA FILE=REGISTRY SUB=L15 SSS FUL L19

L22 110 SEA FILE=HCAPLUS ABB=ON PLU=ON L21

=&gt; fil hcap

FILE 'HCAPLUS' ENTERED AT 12:11:56 ON 22 APR 2005

USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.

PLEASE SEE "HELP USAGETERMS" FOR DETAILS.

COPYRIGHT (C) 2005 AMERICAN CHEMICAL SOCIETY (ACS)

=&gt; d l27 1-36 ibib abs hitstr hitind

L27 ANSWER 1 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2005:275729 HCAPLUS

TITLE: Amorphous metal complex dendrimers and thin-film organic electroluminescent devices using them

INVENTOR(S): Maruyama, Sumio; Kawanishi, Yuji

PATENT ASSIGNEE(S): National Institute of Advanced Industrial Science and Technology, Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005082580	A2	20050331	JP 2003-319858	

USHA SHRESTHA EIC 1700 REM 4B28

PRIORITY APPLN. INFO.:

JP 2003-319858

2003  
09112003  
0911

AB The dendrimers are tris[bis[(N-carbazoyl)phenylethynylphenyl]amino phenylethynylhaloquinolinolato]metals with C1-8 alkyl substituents and metals selected from Al, Zn, Be, Ge, Mg. The dendrimers are capable of forming films by wet process, e.g., coating, because of good solvent solubility

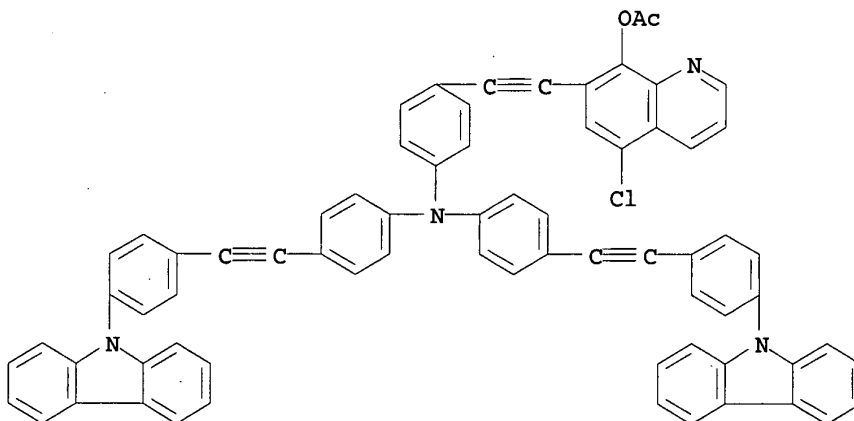
IT INDEXING IN PROGRESS

IT 848601-44-5P 848601-45-6P

(amorphous tris[bis[(N-carbazoyl)phenylethynylphenyl]aminophenylethynylhaloquinolinolato]metals for thin-film organic electroluminescent devices)

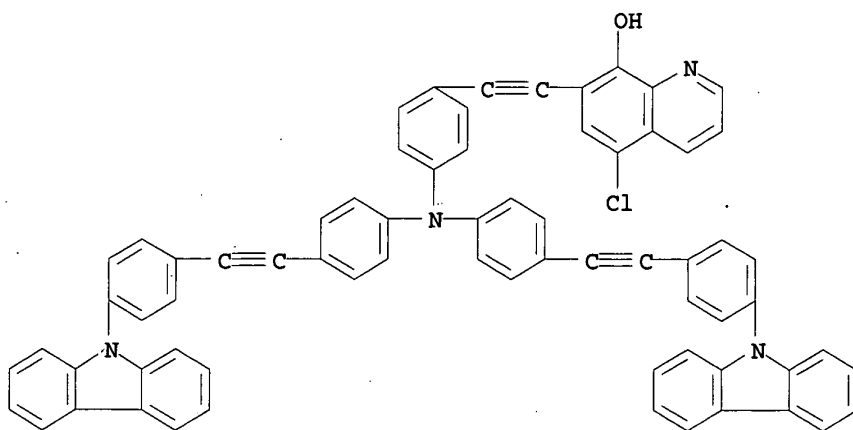
RN 848601-44-5 HCAPLUS

CN 8-Quinolinol, 7-[[4-[bis[4-[[4-(9H-carbazol-9-yl)phenyl]ethynyl]phenyl]amino]phenyl]ethynyl]-5-chloro-, acetate (ester) (9CI) (CA INDEX NAME)



RN 848601-45-6 HCAPLUS

CN 8-Quinolinol, 7-[[4-[bis[4-[[4-(9H-carbazol-9-yl)phenyl]ethynyl]phenyl]amino]phenyl]ethynyl]-5-chloro- (9CI) (CA INDEX NAME)

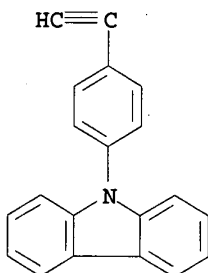


IT 262861-81-4

(amorphous tris[bis[(N-carbazoyl)phenylethynylphenyl]aminophenylethynylhaloquinolinolato]metals for thin-film organic electroluminescent devices)

RN 262861-81-4 HCAPLUS

CN 9H-Carbazole, 9-(4-ethynylphenyl)- (9CI) (CA INDEX NAME)



IC ICM C07D401-14

ICS H05B033-14; C07F005-06

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 78

ST amorphous carbazoyl phenylethynylphenyl aminophenylethynyl quinolinolato metal org electroluminescent device;

solvent soly electroluminescent carbazoyl

phenylethynylphenyl aminophenylethynyl quinolinolato metal; metal complex dendrimer org electroluminescent device

IT Electroluminescent devices

(amorphous tris[bis[(N-carbazoyl)phenylethynylphenyl]aminophenylethynylhaloquinolinolato]metals for thin-film organic electroluminescent devices)

IT Luminescent substances

(electroluminescent; amorphous tris[bis[(N-carbazoyl)phenylethynylphenyl]aminophenylethynylhaloquinolinolato]metals for thin-film organic electroluminescent devices)

IT 7439-95-4D, Magnesium, tris[bis[(N-carbazoyl)phenylethynylphenyl]aminophenylethynyl]haloquinolinolato complexes 7440-41-7D,

Beryllium, tris[bis[(N-carbazoyl)phenylethynylphenyl]aminophenylethynyl]haloquinolinolato] complexes 7440-56-4D, Germanium, tris[bis[(N-carbazoyl)phenylethynylphenyl]aminophenylethynyl]haloquinolinolato] complexes 7440-66-6D, Zinc, tris[bis[(N-carbazoyl)phenylethynylphenyl]aminophenylethynyl]haloquinolinolato] complexes  
 (amorphous tris[bis[(N-carbazoyl)phenylethynylphenyl]aminophenylethynyl]haloquinolinolato]metals for thin-film organic electroluminescent devices)  
 IT 848601-43-4P 848601-44-5P 848601-45-6P  
 (amorphous tris[bis[(N-carbazoyl)phenylethynylphenyl]aminophenylethynyl]haloquinolinolato]metals for thin-film organic electroluminescent devices)  
 IT 4181-20-8, tris(4-iodophenylamine) 262861-81-4  
 691896-89-6  
 (amorphous tris[bis[(N-carbazoyl)phenylethynylphenyl]aminophenylethynyl]haloquinolinolato]metals for thin-film organic electroluminescent devices)

L27 ANSWER 2 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 2005:275728 HCAPLUS  
 TITLE: Amorphous metal complex dendrimers and thin-film organic electroluminescent devices using them  
 INVENTOR(S): Maruyama, Sumio; Kawanishi, Yuji  
 PATENT ASSIGNEE(S): National Institute of Advanced Industrial Science and Technology, Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005082577	A2	20050331	JP 2003-319749	2003 0911
PRIORITY APPLN. INFO.:			JP 2003-319749	2003 0911

GI

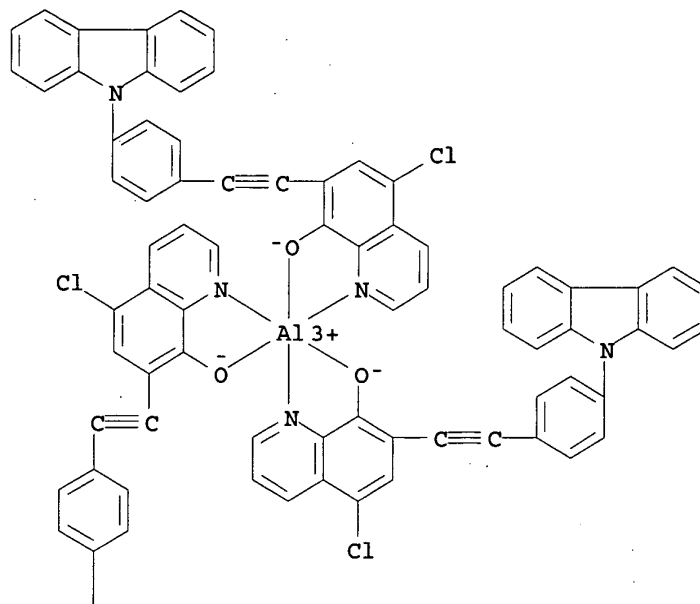
\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT  
 \*

AB The dendrimers are tris[7-[4-(N-carbazoyl)phenylethynyl]-5-chloro-8-quinolinolato]metals I (R1, R2 = H, C1-8 alkyl; M = Al, Zn, Be, Ge, Mg). The dendrimers are capable of forming films by wet process, e.g., coating, because of good solvent solubility derived from the carbazolyl groups.  
 IT 848889-57-6P  
 (amorphous tris[[N-carbazoyl)phenylethynyl]-chloroquinolinolato]metals for thin-film organic

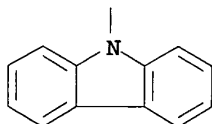


electroluminescent devices)  
 RN 848889-57-6 HCAPLUS  
 CN INDEX NAME NOT YET ASSIGNED

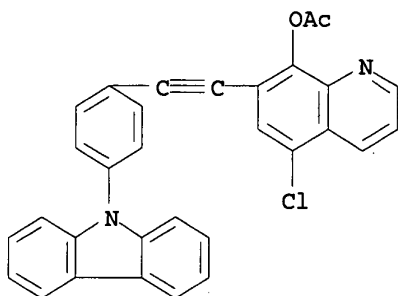
PAGE 1-A



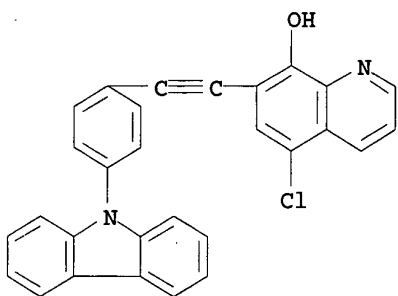
PAGE 2-A



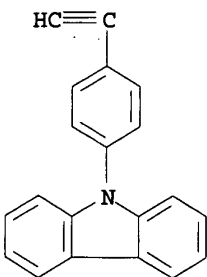
IT 848565-09-3P 848565-10-6P  
 (amorphous tris[[N-carbazoyl]phenylethynyl]-  
 chloroquinolinolato]metals for thin-film organic  
 electroluminescent devices)  
 RN 848565-09-3 HCAPLUS  
 CN 8-Quinolinol, 7-[[4-(9H-carbazol-9-yl)phenyl]ethynyl]-5-chloro-,  
 acetate (ester) (9CI) (CA INDEX NAME)



RN 848565-10-6 HCAPLUS  
 CN 8-Quinolinol, 7-[[4-(9H-carbazol-9-yl)phenyl]ethynyl]-5-chloro-(9CI) (CA INDEX NAME)



IT 262861-81-4  
 (amorphous tris[[4-(N-carbazoyl)phenylethynyl]-chloroquinolinolato]metals for thin-film organic electroluminescent devices)  
 RN 262861-81-4 HCAPLUS  
 CN 9H-Carbazole, 9-(4-ethynylphenyl)-(9CI) (CA INDEX NAME)



IC ICM C07D401-10  
 ICS C07F005-06; C07M001-00  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 78  
 ST amorphous carbazoyl phenylethynyl quinolinolato metal org electroluminescent device; solvent soly carbazoyl phenylethynyl quinolinolato metal org electroluminescent

device; metal complex dendrimer org **electroluminescent** device

IT **Electroluminescent** devices  
(amorphous tris[[N-carbazoyl]phenylethynyl]-chloroquinolinolato]metals for thin-film organic **electroluminescent** devices)

IT Luminescent substances  
(**electroluminescent**; amorphous tris[[N-carbazoyl]phenylethynyl]-chloroquinolinolato]metals for thin-film organic **electroluminescent** devices)

IT **848889-57-6P**  
(amorphous tris[[N-carbazoyl]phenylethynyl]-chloroquinolinolato]metals for thin-film organic **electroluminescent** devices)

IT 7439-95-4D, Magnesium, tris[[N-carbazoyl]phenylethynyl]-chloroquinolinolato] complexes 7440-41-7D, Beryllium, tris[[N-carbazoyl]phenylethynyl]-chloroquinolinolato] complexes 7440-56-4D, Germanium, tris[[N-carbazoyl]phenylethynyl]-chloroquinolinolato] complexes 7440-66-6D, Zinc, tris[[N-carbazoyl]phenylethynyl]-chloroquinolinolato] complexes (amorphous tris[[N-carbazoyl]phenylethynyl]-chloroquinolinolato]metals for thin-film organic **electroluminescent** devices)

IT **848565-09-3P 848565-10-6P**  
(amorphous tris[[N-carbazoyl]phenylethynyl]-chloroquinolinolato]metals for thin-film organic **electroluminescent** devices)

IT 27037-46-3 **262861-81-4**  
(amorphous tris[[N-carbazoyl]phenylethynyl]-chloroquinolinolato]metals for thin-film organic **electroluminescent** devices)

L27 ANSWER 3 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2005:182184 HCAPLUS

DOCUMENT NUMBER: 142:268915

TITLE: Pyran derivative, method for manufacturing the same, and **light-emitting** element containing the pyran derivative

INVENTOR(S): Yamagata, Sachiko; Nomura, Ryoji; Seo, Satoshi

PATENT ASSIGNEE(S): Semiconductor Energy Laboratory Co., Ltd., Japan

SOURCE: U.S. Pat. Appl. Publ., 30 pp.  
CODEN: USXXCO

DOCUMENT TYPE: Patent

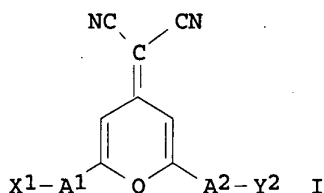
LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
US 2005048315	A1	20050303	US 2004-917668	2004 0813
JP 2005097283	A2	20050414	JP 2004-246178	2004 0826
PRIORITY APPLN. INFO.:			JP 2003-305664	A 2003 0829

GI

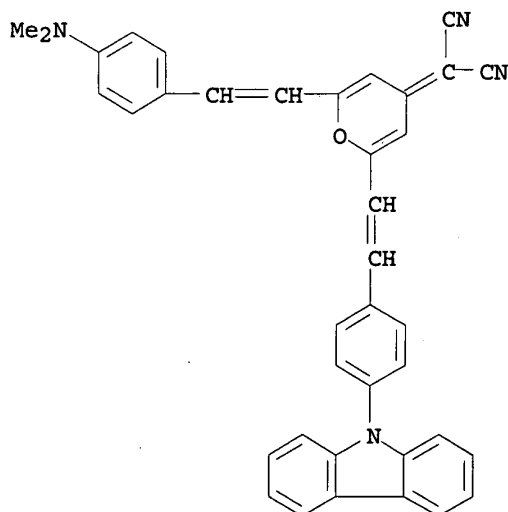


AB A **light-emitting** compound that has excellent carrier transportation properties and that can exhibit long wavelength light is disclosed. Further, a method for manufacturing the **light-emitting** compound in a high yield is disclosed. The disclosed **light-emitting** compound is a pyran derivative I [A1,2 =  $\pi$ -conjugated system group having 6 to 16 conjugating C atoms; X1 = dialkylamino; Y1 = diarylamino or alkylaryl amino].

IT **845961-15-1P 845961-16-2P**  
(pyran derivative, method for manufacturing the same, and **light-emitting** element containing the pyran derivative)

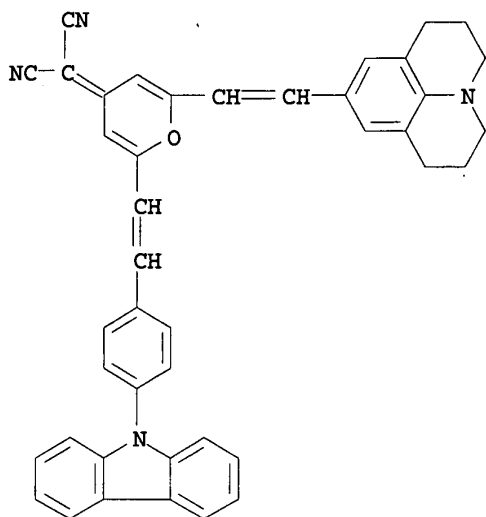
RN 845961-15-1 HCAPLUS

CN Propanedinitrile, [2-[2-[4-(9H-carbazol-9-yl)phenyl]ethenyl]-6-[2-[4-(dimethylamino)phenyl]ethenyl]-4H-pyran-4-ylidene]- (9CI) (CA INDEX NAME)



RN 845961-16-2 HCAPLUS

CN INDEX NAME NOT YET ASSIGNED



IC ICM H05B033-14  
ICS C07D309-34; C09K011-06  
NCL 428690000; 549426000; 428917000; 313504000  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
ST pyran **electroluminescent** device carrier transport  
IT **Electroluminescent** devices  
(pyran derivative, method for manufacturing the same, and **light-emitting** element containing the pyran derivative)  
IT 65891-59-OP 845961-13-9P 845961-14-OP **845961-15-1P**  
**845961-16-2P**  
(pyran derivative, method for manufacturing the same, and **light-emitting** element containing the pyran derivative)  
IT 4181-05-9, p-(Diphenylamino)benzaldehyde 51325-91-8,  
4-(Dicyanomethylene)-2-methyl-6-(p-(dimethylamino)styryl)-4H-pyran  
51325-95-2 159787-99-2 178120-19-9  
(pyran derivative, method for manufacturing the same, and **light-emitting** element containing the pyran derivative)

L27 ANSWER 4 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2005:51035 HCAPLUS

DOCUMENT NUMBER: 142:165272

TITLE: Block copolymers for organic **electroluminescent** (EL) device and its display, illumination, and light source  
INVENTOR(S): Kawakami, Akira; Kita, Hiroshi; Ogino, Kenji  
PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 56 pp.  
CODEN: JKXXAF

DOCUMENT TYPE: Patent  
LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005015508	A2	20050120	JP 2003-177859	

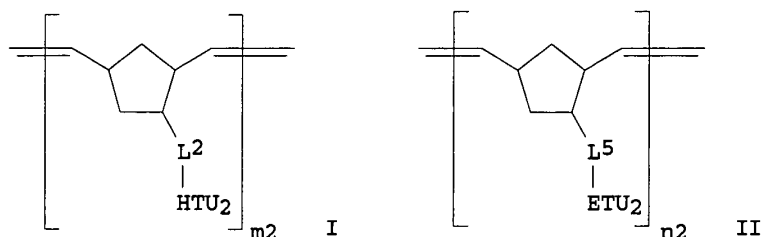
USHA SHRESTHA EIC 1700 REM 4B28

PRIORITY APPLN. INFO.:

JP 2003-177859

2003  
06232003  
0623

GI



AB The block copolymers comprise (A) block components of repeating units having hole-transporting units (HTU), (B) block components of repeating units having electron-transporting units (ETU), and (C) repeating units having phosphorescent units. Preferably, the block A is represented by the general formula  $[\text{CHR}_1\text{CR}_2(\text{L}_1\text{HTU}_1)]_{m1}$ , I, or  $[\text{O}(\text{CR}_3\text{R}_4)\text{L}_1\text{CR}_5(\text{L}_3\text{HTU}_3)]_{m3}$  ( $\text{HTU}_1$ - $\text{HTU}_3$  = hole-transporting moiety;  $\text{R}_1$ - $\text{R}_5$  = H, substituent;  $\text{L}_1$ - $\text{L}_3$  = linking group, bond;  $m \geq 3$  integer;  $l_1 = 1, 2, 3$ ) and the block B is represented by the general formula  $[\text{CHR}_6\text{CR}_7(\text{L}_4\text{ETU}_1)]_{n1}$ , II, or  $[\text{O}(\text{CR}_8\text{R}_9)\text{L}_2\text{CR}_{10}(\text{L}_6\text{ETU}_3)]_{n3}$  ( $\text{ETU}_1$ - $\text{ETU}_3$  = electron-transporting moiety;  $\text{R}_6$ - $\text{R}_{10}$  = H, substituent;  $\text{L}_4$ - $\text{L}_6$  = linking group, bond;  $n_1$ - $n_3 \geq 3$  integer;  $l_2 = 1, 2, 3$ ). Preferably, the HTU comprise triphenylamine units and the ETU have F or F-containing substituents. Preferably, the surface free energy of the monomer forming HTU-containing repeating units is larger than that of the monomers of the ETU-containing repeating units and these monomers are incompatible to each other. Preferably, the block copolymers are prepared by atom.-transfer radical polymerization. Preferably,  $\geq 1$  of the block A contains hydrolyzable silyl groups, more preferably, trialkoxysilyl groups, and also contains dialkylamino groups. The organic EL device contains the A-B-C block copolymers in  $\geq 1$  of the organic layers provided between a cathode and an anode. In another alternative, the organic EL device contains A-B block copolymers and phosphorescent compds. The organic EL device has high emission efficiency, long service life, and high productivity.

IT 828940-06-3P 830318-16-6P 830318-18-8P

830318-20-2P 830318-21-3P 830318-22-4P

830318-26-8P 830318-27-9P 830318-28-0P

(block copolymers for organic EL device for display, illumination, and light source)

RN 828940-06-3 HCAPLUS

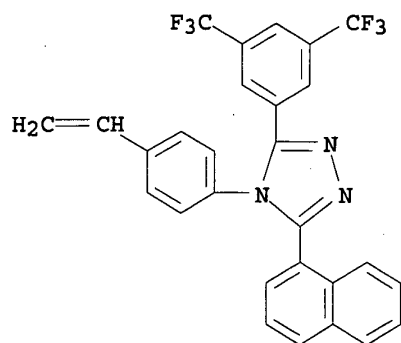
CN 9H-Carbazole, 9-(4-ethenylphenyl)-, polymer with  
3-[3,5-bis(trifluoromethyl)phenyl]-4-(4-ethenylphenyl)-5-(1-naphthalenyl)-4H-1,2,4-triazole, block (9CI) (CA INDEX NAME)

CM 1

CRN 828940-05-2

CMF C28 H17 F6 N3

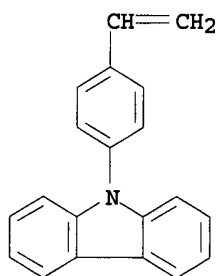
USHA SHRESTHA EIC 1700 REM 4B28



CM 2

CRN 52913-19-6

CMF C20 H15 N



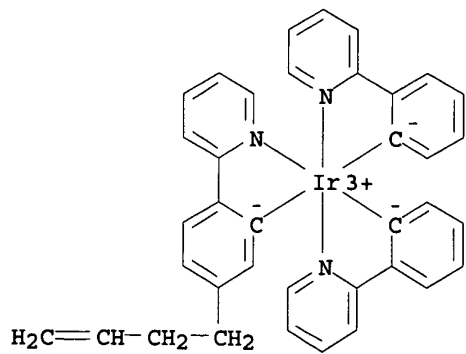
RN 830318-16-6 HCAPLUS  
 CN INDEX NAME NOT YET ASSIGNED

CM 1

CRN 830318-15-5

CMF C37 H30 Ir N3

CCI CCS

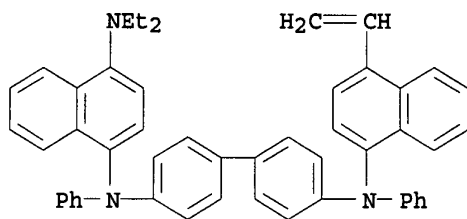


USHA SHRESTHA EIC 1700 REM 4B28

CM 2

CRN 828940-14-3

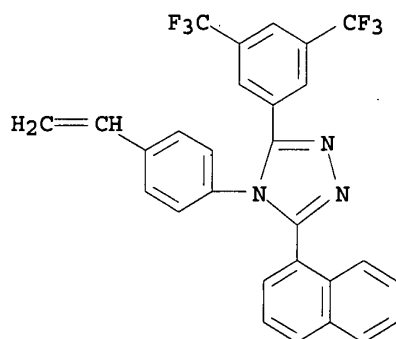
CMF C50 H43 N3



CM 3

CRN 828940-05-2

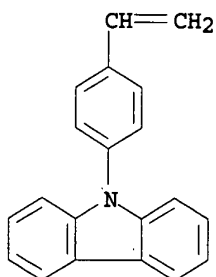
CMF C28 H17 F6 N3



CM 4

CRN 52913-19-6

CMF C20 H15 N



RN 830318-18-8 HCAPLUS

USHA SHRESTHA EIC 1700 REM 4B28



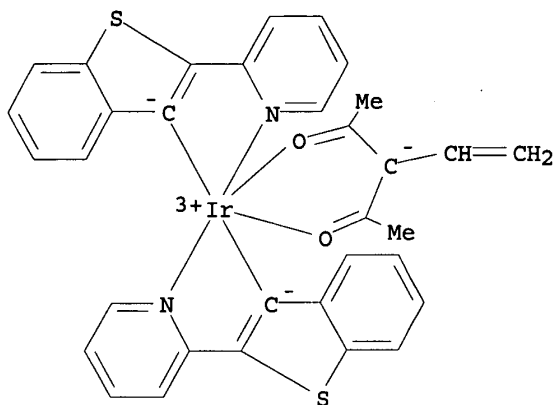
CN INDEX NAME NOT YET ASSIGNED

CM 1

CRN 830318-17-7

CMF C33 H25 Ir N2 O2 S2

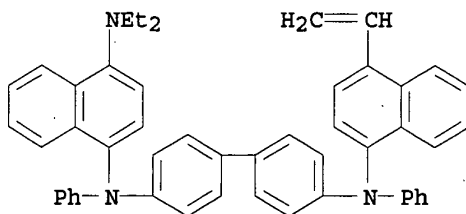
CCI CCS



CM 2

CRN 828940-14-3

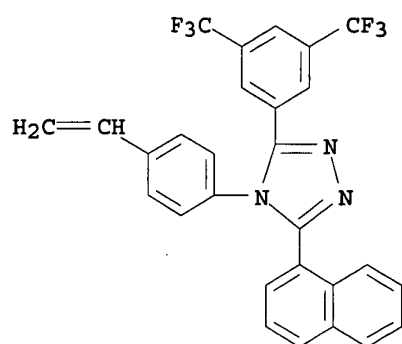
CMF C50 H43 N3



CM 3

CRN 828940-05-2

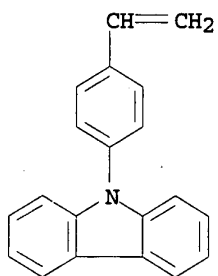
CMF C28 H17 F6 N3



CM 4

CRN 52913-19-6

CMF C20 H15 N



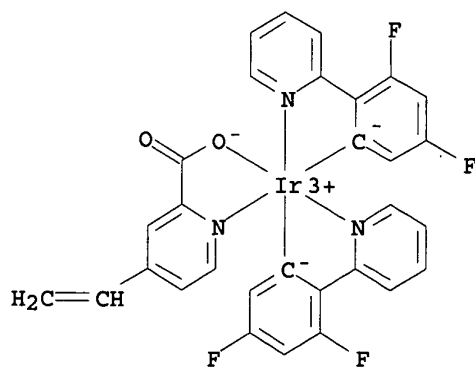
RN 830318-20-2 HCAPLUS  
 CN INDEX NAME NOT YET ASSIGNED

CM 1

CRN 830318-19-9

CMF C30 H18 F4 Ir N3 O2

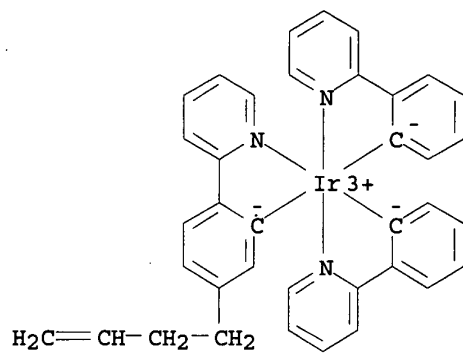
CCI CCS



USHA SHRESTHA EIC 1700 REM 4B28

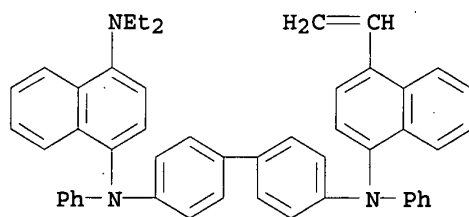
CM 2

CRN 830318-15-5  
 CMF C37 H30 Ir N3  
 CCI CCS



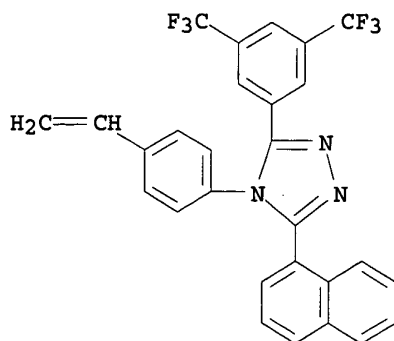
CM 3

CRN 828940-14-3  
 CMF C50 H43 N3



CM 4

CRN 828940-05-2  
 CMF C28 H17 F6 N3



CM 5

CRN 805236-96-8

CMF C29 H19 Ir N2 O2 S2

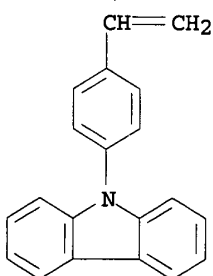
CCI CCS

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 6

CRN 52913-19-6

CMF C20 H15 N



RN 830318-21-3 HCAPLUS

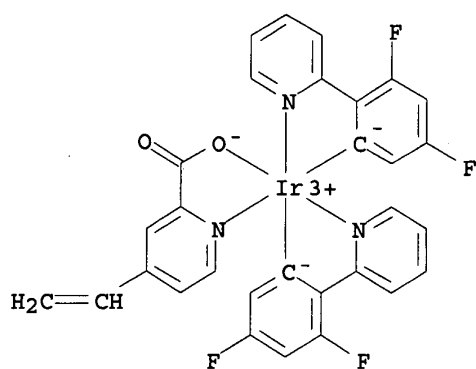
CN INDEX NAME NOT YET ASSIGNED

CM 1

CRN 830318-19-9

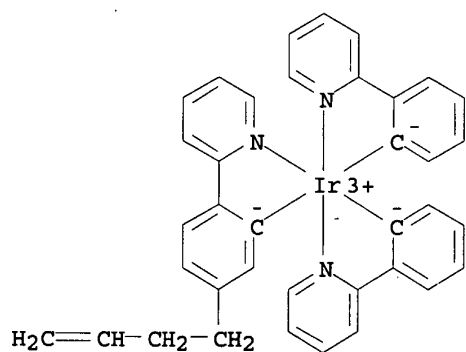
CMF C30 H18 F4 Ir N3 O2

CCI CCS



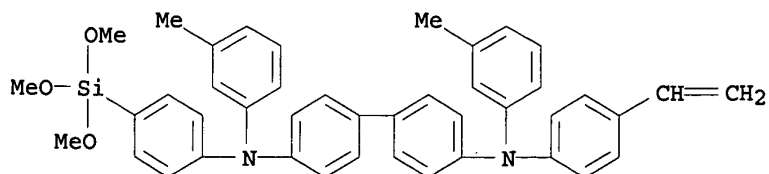
CM 2

CRN 830318-15-5  
 CMF C37 H30 Ir N3  
 CCI CCS



CM 3

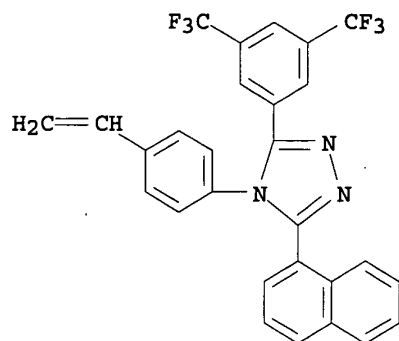
CRN 828940-12-1  
 CMF C43 H42 N2 O3 Si



CM 4

CRN 828940-05-2

CMF C28 H17 F6 N3



CM 5

CRN 805236-96-8

CMF C29 H19 Ir N2 O2 S2

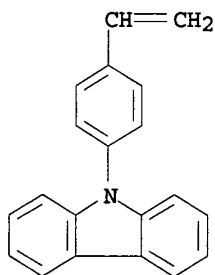
CCI CCS

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 6

CRN 52913-19-6

CMF C20 H15 N



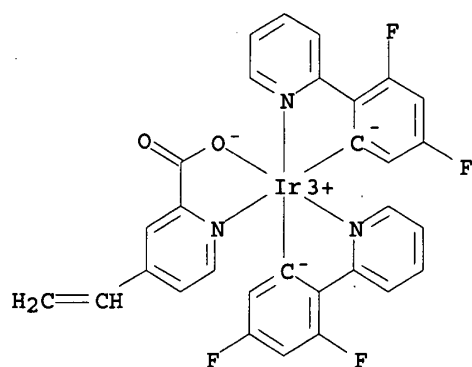
RN 830318-22-4 HCAPLUS  
CN INDEX NAME NOT YET ASSIGNED

CM 1

CRN 830318-19-9

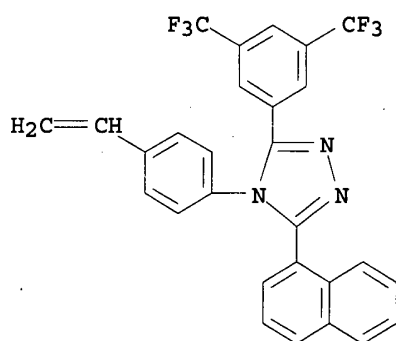
CMF C30 H18 F4 Ir N3 O2

CCI CCS



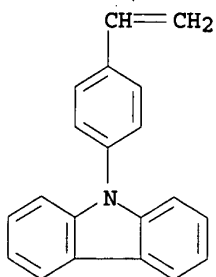
CM 2

CRN 828940-05-2  
 CMF C28 H17 F6 N3



CM 3

CRN 52913-19-6  
 CMF C20 H15 N



RN 830318-26-8 HCAPLUS  
 CN INDEX NAME NOT YET ASSIGNED

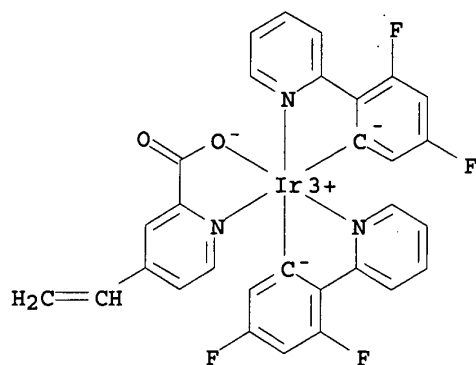
USHA SHRESTHA EIC 1700 REM 4B28

CM 1

CRN 830318-19-9

CMF C30 H18 F4 Ir N3 O2

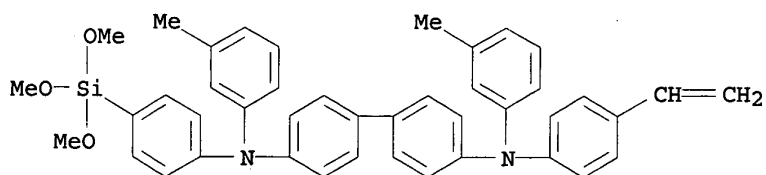
CCI CCS



CM 2

CRN 828940-12-1

CMF C43 H42 N2 O3 Si

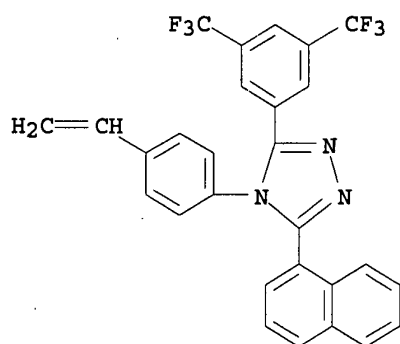


CM 3

CRN 828940-05-2

CMF C28 H17 F6 N3

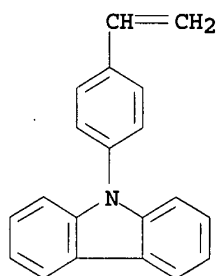




CM 4

CRN 52913-19-6

CMF C20 H15 N



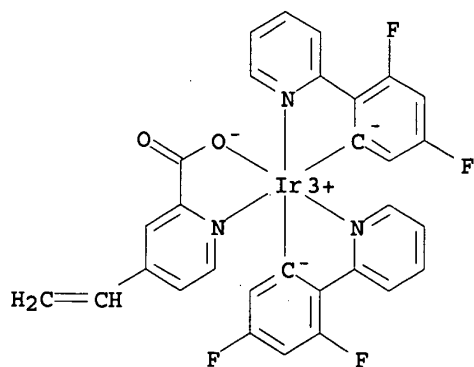
RN 830318-27-9 HCAPLUS  
 CN INDEX NAME NOT YET ASSIGNED

CM 1

CRN 830318-19-9

CMF C30 H18 F4 Ir N3 O2

CCI CCS

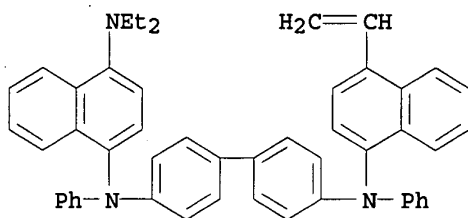


USHA SHRESTHA EIC 1700 REM 4B28

CM 2

CRN 828940-14-3

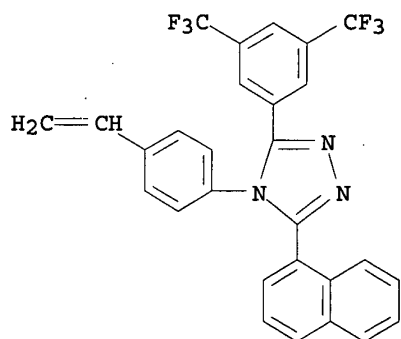
CMF C50 H43 N3



CM 3

CRN 828940-05-2

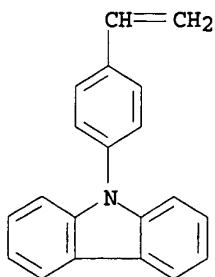
CMF C28 H17 F6 N3



CM 4

CRN 52913-19-6

CMF C20 H15 N



RN 830318-28-0 HCAPLUS

USHA SHRESTHA EIC 1700 REM 4B28

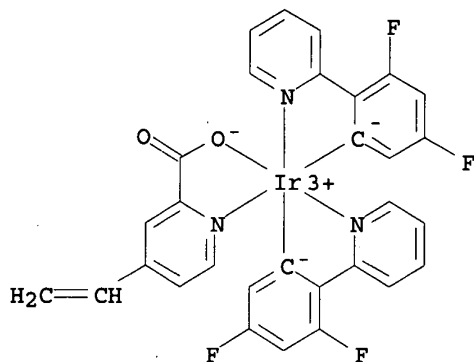
CN INDEX NAME NOT YET ASSIGNED

CM 1

CRN 830318-19-9

CMF C30 H18 F4 Ir N3 O2

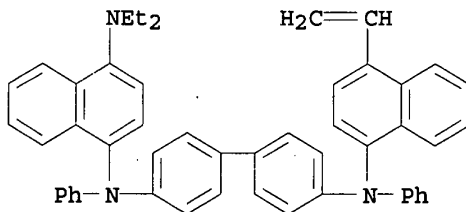
CCI CCS



CM 2

CRN 828940-14-3

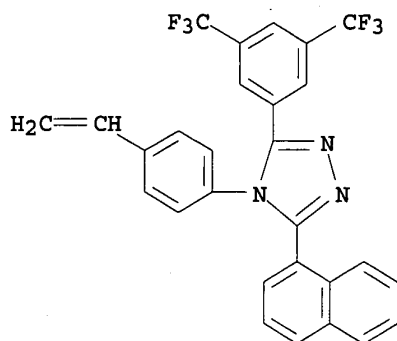
CMF C50 H43 N3



CM 3

CRN 828940-05-2

CMF C28 H17 F6 N3



CM 4

CRN 805236-96-8

CMF C29 H19 Ir N2 O2 S2

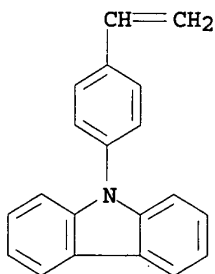
CCI CCS

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 5

CRN 52913-19-6

CMF C20 H15 N



IC ICM C08F297-00

ICS C08G065-02; C09K011-06; H05B033-14; H05B033-22

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 38, 74

ST hole transporting unit block copolymer **electroluminescent** device; electron transporting unit block copolymer **electroluminescent** device; phosphorescent unit block copolymer **electroluminescent** device; light source org **electroluminescent** device; illumination org **electroluminescent** device; org **electroluminescent** display block copolymer

IT **Electroluminescent** devices

(displays; block copolymers for organic EL device for display, illumination, and light source)

IT Luminescent screens

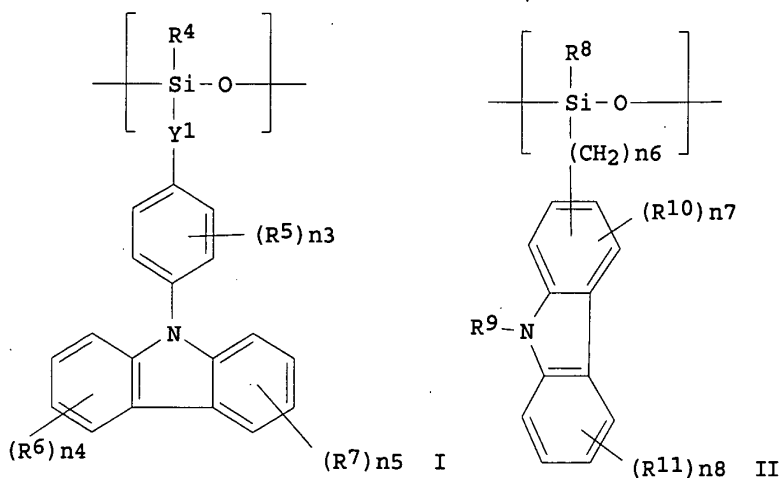
(**electroluminescent**; block copolymers for organic EL)

device for display, illumination, and light source)  
IT **Electroluminescent** devices  
(organic; block copolymers for organic EL device for display,  
illumination, and light source)  
IT 828940-06-3P 830318-16-6P 830318-18-8P  
830318-20-2P 830318-21-3P 830318-22-4P  
830318-25-7P 830318-26-8P 830318-27-9P  
830318-28-0P 830318-29-1P  
(block copolymers for organic EL device for display, illumination,  
and light source)

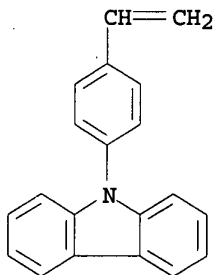
L27 ANSWER 5 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN  
ACCESSION NUMBER: 2004:904515 HCAPLUS  
DOCUMENT NUMBER: 141:403231  
TITLE: Organic **electroluminescent** devices  
with high efficiency and durability and  
materials and carbazole-containing  
polysiloxanes therefor  
INVENTOR(S): Watanabe, Saisuke  
PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 31 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	---	-----	-----	
JP 2004303636	A2	20041028	JP 2003-96951	2003 0331
PRIORITY APPLN. INFO.:			JP 2003-96951	2003 0331

GI



- AB The devices have, between a pair of electrodes,  $\geq 1$  **organic** layers including **luminescent** layers containing luminescent (or phosphorescent) materials and polymers with [RSi(YZ)O] units [R = H, substituents; Y = single bond, divalent linking group; Z = charge-transporting group; luminescent materials may be incorporated into R, Y, or Z], e.g., I (R<sup>4</sup>-R<sup>7</sup> = H, substituents; Y<sub>1</sub> = single bond, divalent linking group; n<sub>3</sub>, n<sub>4</sub>, n<sub>5</sub> = 1-4) and II (R<sup>8</sup>-R<sup>11</sup> = same as R<sup>4</sup>; n<sub>6</sub>  $\geq 0$ ; n<sub>7</sub> = 1-3; n<sub>8</sub> = 1-4).
- IT **52913-19-6DP**, reaction products with Me hydrogen silandiol homopolymer  
(host compds.; carbazole-containing polysiloxanes for organic **electroluminescent** devices with high efficiency and durability)
- RN 52913-19-6 HCAPLUS
- CN 9H-Carbazole, 9-(4-ethenylphenyl)- (9CI) (CA INDEX NAME)



- IC ICM H05B033-14  
ICS C08K005-00; C08L083-08; C09K011-06
- CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 38
- ST org **electroluminescent** phosphor host carbazole polysiloxane; allylcarbazole methyl hydrogen siloxane hydrosilylation phosphor; **electroluminescent** efficiency

- durability carbazole siloxane luminescent layer
- IT **Electroluminescent** devices  
(carbazole-containing polysiloxanes for organic **electroluminescent** devices with high efficiency and durability)
- IT Phosphors  
(**electroluminescent**; carbazole-containing polysiloxanes for organic **electroluminescent** devices with high efficiency and durability)
- IT Polysiloxanes, uses  
(host compds.; carbazole-containing polysiloxanes for organic **electroluminescent** devices with high efficiency and durability)
- IT 49718-23-2DP, Methyl hydrogen silanediol homopolymer, reaction products with vinyl-containing carbazoles  
(assumed monomers, host compds.; carbazole-containing polysiloxanes for organic **electroluminescent** devices with high efficiency and durability)
- IT 351863-09-7 358974-66-0  
(electron-transporting compds.; carbazole-containing polysiloxanes for organic **electroluminescent** devices with high efficiency and durability)
- IT 38215-36-0 785777-63-1  
(guests; carbazole-containing polysiloxanes for organic **electroluminescent** devices with high efficiency and durability)
- IT 1486-07-3DP, N-Ethyl-3-vinylcarbazole, reaction products with Me hydrogen polysiloxanes 9004-73-3DP, Poly[oxy(methylsilylene)], reaction products with vinyl-containing carbazoles  
52913-19-6DP, reaction products with Me hydrogen silandiol homopolymer  
(host compds.; carbazole-containing polysiloxanes for organic **electroluminescent** devices with high efficiency and durability)
- IT 3998-04-7DP, 9-Allylcarbazole, reaction products with Me hydrogen silandiol homopolymer  
(in preparation of host compds.; carbazole-containing polysiloxanes for organic **electroluminescent** devices with high efficiency and durability)
- IT 110677-45-7P  
(in preparation of host compds.; carbazole-containing polysiloxanes for organic **electroluminescent** devices with high efficiency and durability)
- IT 86-74-8, Carbazole 1122-91-4, p-Bromobenzaldehyde 7570-45-8, N-Ethylcarbazole-3-carboxaldehyde  
(in preparation of host compds.; carbazole-containing polysiloxanes for organic **electroluminescent** devices with high efficiency and durability)

L27 ANSWER 6 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2004:801292 HCAPLUS

DOCUMENT NUMBER: 141:304034

TITLE: Organic **electroluminescent** materials  
and high-luminance **electroluminescent**  
devices therewith

INVENTOR(S): Narihiro, Harunori; Tamano, Michiko; Kurata,  
Ryuichiro

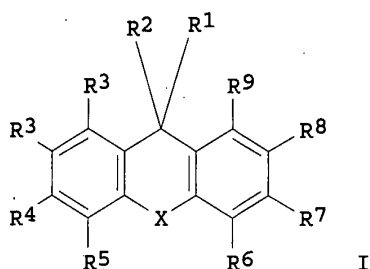
PATENT ASSIGNEE(S): Toyo Ink Mfg. Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 16 pp.  
CODEN: JKXXAF

DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004269696	A2	20040930	JP 2003-62618	2003 0310
PRIORITY APPLN. INFO.:			JP 2003-62618	2003 0310

GI

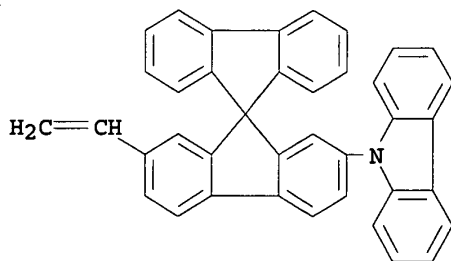


AB The materials, forming emitting layers of organic LED, are polymers having unit derived from I (X = single bond, C1-10 alkyl, O, S, N; R1-R9 = H or substituent essentially including condensed aromatic heterocycle). The emitting layers may contain phosphorescent materials.

IT **761459-34-1P**  
 (emitting layers; high-luminance organic  
**LED** containing aromatic heterocycle-branched fluorene polymers  
 in emitting layers)

RN 761459-34-1 HCAPLUS

CN 9H-Carbazole, 9-(7-ethenyl-9,9'-spirobi[9H-fluoren]-2-yl)- (9CI)  
 (CA INDEX NAME)



IT **761459-36-3**  
 (emitting layers; high-luminance organic  
**LED** containing aromatic heterocycle-branched fluorene polymers)

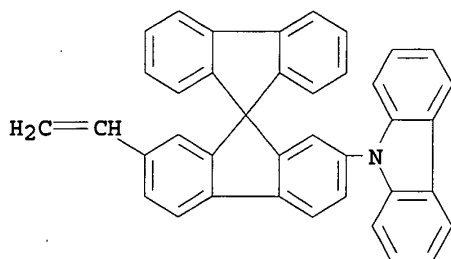


in emitting layers)  
 RN 761459-36-3 HCAPLUS  
 CN 9H-Carbazole, 9-(7-ethenyl-9,9'-spirobi[9H-fluoren]-2-yl)-,  
 homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 761459-34-1

CMF C39 H25 N



IC ICM C08F012-32  
 ICS C08F026-06; C08G061-12; C09K011-06; H05B033-14; H05B033-22  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 38  
 ST **electroluminescent** device fluorene polymer emitting layer; carbazole branched fluorene polymer **electroluminescent** material  
 IT Luminescent substances  
 (electroluminescent; high-luminance **organic LED** containing aromatic heterocycle-branched fluorene polymers in emitting layers)  
 IT **Electroluminescent** devices  
 (high-luminance **organic LED** containing aromatic heterocycle-branched fluorene polymers in emitting layers)  
 IT 94928-86-6, Tris(2-phenylpyridine)iridium  
 (emitting layers; high-luminance **organic LED** containing aromatic heterocycle-branched fluorene polymers in emitting layers)  
 IT 761459-34-1P  
 (emitting layers; high-luminance **organic LED** containing aromatic heterocycle-branched fluorene polymers in emitting layers)  
 IT 761459-36-3 761459-38-5  
 (emitting layers; high-luminance **organic LED** containing aromatic heterocycle-branched fluorene polymers in emitting layers)  
 IT 761459-35-2P  
 (high-luminance **organic LED** containing aromatic heterocycle-branched fluorene polymers in emitting layers)  
 IT 86-74-8, Carbazole 7486-35-3, Tributylvinyltin 171408-84-7  
 (high-luminance **organic LED** containing aromatic heterocycle-branched fluorene polymers in emitting layers)

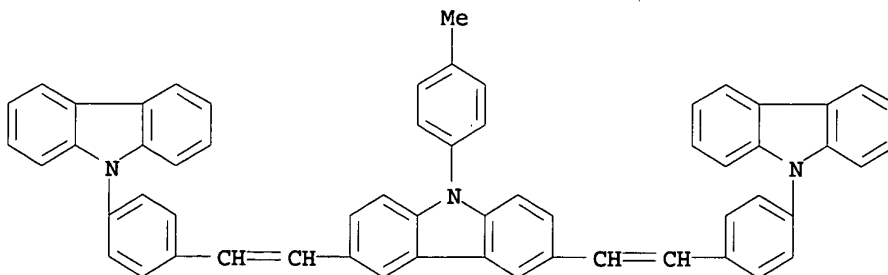
L27 ANSWER 7 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 2004:693891 HCAPLUS  
 DOCUMENT NUMBER: 141:357253  
 TITLE: Charge mobilities and luminescence characteristics of blue-light emitting bent carbazole trimers connected through vinylene linkers-effect of nitrile substituents  
 AUTHOR(S): Kim, Bong Soo; Joo, Sung-Hoon; Oh, Dongkeun; Cha, Soon Wook; Choi, Don Soo; Lee, Cheol Eui; Jin, Jung-Il  
 CORPORATE SOURCE: Department of Chemistry, Center for Electron- and Photo-Responsive Molecules, Korea University, Seoul, 136-701, S. Korea  
 SOURCE: Synthetic Metals (2004), 145(2-3), 229-235  
 CODEN: SYMEDZ; ISSN: 0379-6779  
 PUBLISHER: Elsevier B.V.  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

AB Two new blue-light emitters, 3,6-bis(4-carbazolylstyryl)-N-(4-methylphenyl)carbazole (Cz3) and 3,6-bis[4-(3,6-dicyanocarbazolyl)styryl]-N-(4-methylphenyl)carbazole [Cz3(CN)4], were found to form high glass-transition temperature ( $T_g$ ), amorphous organic glasses, when vacuum deposited. Cz3(CN)4 exhibited a much higher  $T_g$  value (242 °C) than Cz3 (163 °C). It was found that Cz3 is an excellent hole transporter ( $\mu_h = 1.3 \times 10^{-4} \text{ cm}^2/\text{V s}$ ,  $\mu_e = 2.8 \times 10^{-8} \text{ cm}^2/\text{V s}$ ) while Cz3(CN)4 shows a faster electron mobility ( $\mu_e = 3.1 \times 10^{-6} \text{ cm}^2/\text{V s}$ ) than hole mobility ( $\mu_h = 2.0 \times 10^{-8} \text{ cm}^2/\text{V s}$ ), which is perceived to tell us that the presence of the electron-attracting nitrile (C≡N) groups facilitates the electron mobility. The single layer electroluminescence (EL) device (ITO/EML/Li:Al) of Cz3(CN)4 performed much better (external quantum efficiency .apprx.3.0 + 10<sup>-2</sup> %) than that of Cz3 (external quantum efficiency .apprx.1.2 + 10<sup>-3</sup> %).

IT 774198-02-6 774198-03-7  
 (charge mobilities and luminescence characteristics of blue-light emitting bent carbazole trimers connected through vinylene linkers and effect of nitrile substituents)

RN 774198-02-6 HCAPLUS

CN 9H-Carbazole, 3,6-bis[2-[4-(9H-carbazol-9-yl)phenyl]ethenyl]-9-(4-methylphenyl)- (9CI) (CA INDEX NAME)

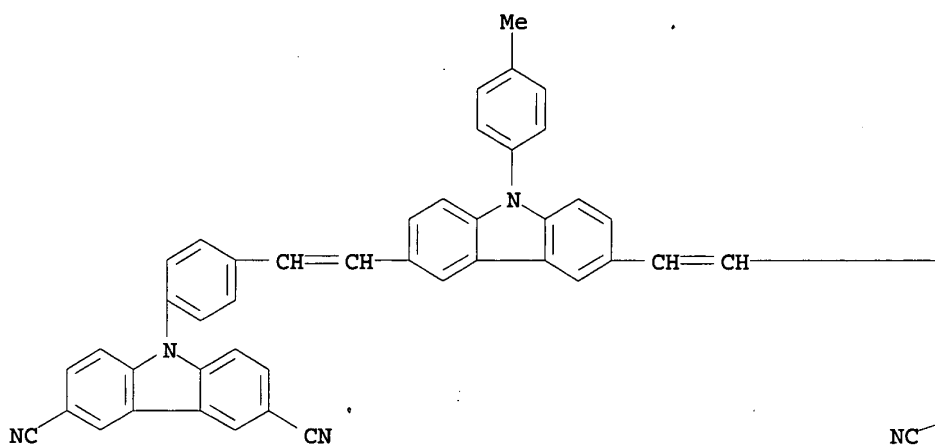


RN 774198-03-7 HCAPLUS

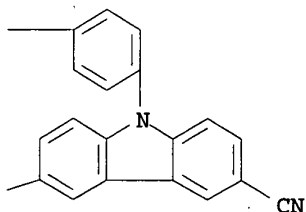
CN 9H-Carbazole-3,6-dicarbonitrile, 9,9'-[[9-(4-methylphenyl)-9H-

carbazole-3,6-diyl]bis(2,1-ethenediyl-4,1-phenylene)]bis- (9CI)  
(CA INDEX NAME)

PAGE 1-A



PAGE 1-B



- CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
- IT Electric current-potential relationship
- Electroluminescent devices**
- Electron mobility
- HOMO (molecular orbital)
- Hole mobility
- LUMO (molecular orbital)
- Luminescence
- Luminescence, **electroluminescence**
- UV and visible spectra
- (charge mobilities and luminescence characteristics of blue-light emitting bent carbazole trimers)

- connected through vinylene linkers and effect of nitrile substituents)
- IT Luminescent substances  
(**electroluminescent**; charge mobilities and luminescence characteristics of blue-light **emitting** bent carbazole trimers connected through vinylene linkers and effect of nitrile substituents)
- IT Glass transition temperature  
(of carbazole trimers; charge mobilities and luminescence characteristics of blue-light **emitting** bent carbazole trimers connected through vinylene linkers and effect of nitrile substituents)
- IT Substituent effects  
(of nitrile group; charge mobilities and luminescence characteristics of blue-light **emitting** bent carbazole trimers connected through vinylene linkers and effect of nitrile substituents)
- IT Band gap  
(optical; charge mobilities and luminescence characteristics of blue-light **emitting** bent carbazole trimers connected through vinylene linkers and effect of nitrile substituents)
- IT Cyano group  
(substituent effect; charge mobilities and luminescence characteristics of blue-light **emitting** bent carbazole trimers connected through vinylene linkers and effect of nitrile substituents)
- IT 39445-86-8, Aluminum 99.7, lithium 0.3 50926-11-9, ITO  
(charge mobilities and luminescence characteristics of blue-light **emitting** bent carbazole trimers connected through vinylene linkers and effect of nitrile substituents)
- IT 774198-02-6 774198-03-7  
(charge mobilities and luminescence characteristics of blue-light **emitting** bent carbazole trimers connected through vinylene linkers and effect of nitrile substituents)

REFERENCE COUNT: 47 THERE ARE 47 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 8 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2004:584660 HCAPLUS

DOCUMENT NUMBER: 141:131060

TITLE: Tertiary aromatic amines and their organic **electroluminescent** devices showing long service life

INVENTOR(S): Totani, Yoshiyuki; Shimamura, Takehiko;

Tanabe, Yoshimitsu; Tsukada, Hidetaka

PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 47 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
-----				

JP 2004203765

A2

20040722

JP 2002-373354

2002

1225

PRIORITY APPLN. INFO.:

JP 2002-373354

2002

1225

OTHER SOURCE(S): MARPAT 141:131060

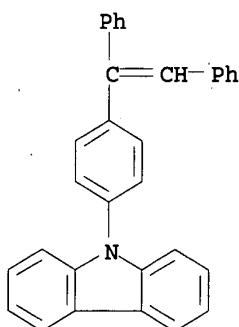
AB The amines are (E)- or (Z)- Ar1Ar2NXCAr4:CRAr3 [I; Ar1-Ar4 = (un)substituted aromatic hydrocarbyl, (un)substituted aromatic heterocyclyl; Ar1Ar2 may form N-containing heterocyclic group; R = H, cyano, halo, (un)substituted (cyclo)alkyl, (un)substituted aromatic hydrocarbyl, (un)substituted aromatic heterocyclyl; X = aromatic hydrocarbylene, aromatic heterocyclylene]. Thus, (E)- or (Z)-I (Ar1 = Ar3 = Ar4 = Ph, Ar2 = 6-phenylnaphthalen-2-yl, R = H, X = 4,4'-biphenylene) was manufactured and used as a hole-transporting layer for organic **electroluminescent** device.

IT 724792-71-6P

(manufacture of tertiary aromatic amines for organic **electroluminescent** devices showing long service life)

RN 724792-71-6 HCAPLUS

CN 9H-Carbazole, 9-[4-(1,2-diphenylethenyl)phenyl]- (9CI) (CA INDEX NAME)



IC ICM C07C211-54

ICS C07C211-57; C07C211-58; C07C211-61; C07D209-88; C07D307-91;  
C07D333-76; C07D409-04; C09K011-06; H05B033-14

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 25, 27

ST tertiary arom amine org **electroluminescent** device;  
phenyl phenylnaphthalenyl amino diphenylvinyl biphenyl org  
**electroluminescent** device

IT Luminescent substances

(**electroluminescent**; manufacture of tertiary aromatic amines  
for organic **electroluminescent** devices showing long  
service life)

IT **Electroluminescent** devices

(organic; manufacture of tertiary aromatic amines for organic  
**electroluminescent** devices showing long service life)

IT 98789-58-3P 724792-68-1P 724792-69-2P 724792-70-5P

724792-71-6P 724792-72-7P 724792-73-8P 724792-80-7P

(manufacture of tertiary aromatic amines for organic  
**electroluminescent** devices showing long service life)

IT 16911-33-4P 34699-27-9P 724792-75-0P 724792-76-1P

724792-77-2P 724792-78-3P 724792-79-4P  
 (manufacture of tertiary aromatic amines for organic  
**electroluminescent** devices showing long service life)  
 IT 86-74-8, Carbazole 90-30-2, N-Phenyl-1-naphthylamine 90-90-4  
 98-88-4, Benzoyl chloride 603-34-9, N,N-Diphenylaniline  
 1080-32-6, Diethyl benzylphosphonate 3920-79-4 30818-70-3  
 605630-40-8 724792-74-9  
 (manufacture of tertiary aromatic amines for organic  
**electroluminescent** devices showing long service life)

L27 ANSWER 9 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2004:568564 HCAPLUS

DOCUMENT NUMBER: 141:131025

TITLE: Aromatic diamines and their organic  
**electroluminescent** devices showing  
 good durability

INVENTOR(S): Totani, Yoshiyuki; Shimamura, Takehiko;  
 Tanabe, Yoshimitsu; Tsukada, Hidetaka

PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 69 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004196716	A2	20040715	JP 2002-367559	2002 1219
PRIORITY APPLN. INFO.:				2002 1219

OTHER SOURCE(S): MARPAT 141:131025

AB The diamines are (E)- and/or (Z)- (Ar1Ar2NX)Ar4C:CR(Ar3NAr5Ar6)  
 [I; Ar1, Ar2, Ar4-Ar6 = (un)substituted aromatic hydrocarbyl,  
 (un)substituted aromatic heterocyclyl; Ar1Ar2 and/or Ar5Ar6 may form  
 N-containing heterocycle; R = H, cyano, halo, (un)substituted  
 (cyclo)alkyl, (un)substituted aromatic hydrocarbyl, (un)substituted  
 aromatic heterocyclyl; X, Ar3 = aromatic hydrocarbylene, aromatic  
 heterocyclylene]. Thus, an organic **electroluminescent**  
 device having a hole-injecting layer comprising I (Ar1 = Ar4 = Ar5  
 = Ph, Ar2 = Ar6 = 1-naphthyl, Ar3 = 1,4-phenylene, X =  
 4,4'-biphenylene, R = H) was manufactured and half life of its  
 luminescence intensity was examined

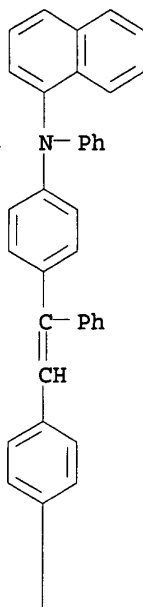
IT 722547-32-2P 722547-35-5P

(aromatic diamines as **electroluminescent** materials for  
 organic **electroluminescent** devices showing good  
 durability)

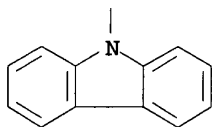
RN 722547-32-2 HCAPLUS

CN 1-Naphthalenamine, N-[4-[2-[4-(9H-carbazol-9-yl)phenyl]-1-  
 phenylethenyl]phenyl]-N-phenyl- (9CI) (CA INDEX NAME)

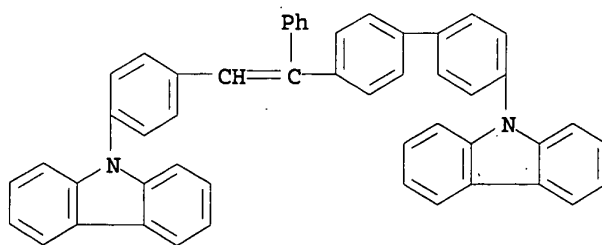
PAGE 1-A



PAGE 2-A

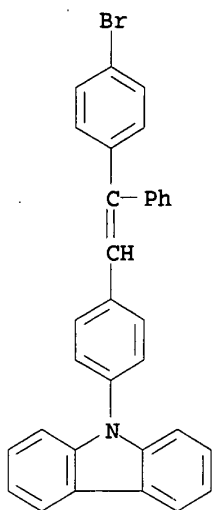


RN 722547-35-5 HCAPLUS  
 CN 9H-Carbazole, 9-[4-[2-[4'-(9H-carbazol-9-yl)[1,1'-biphenyl]-4-yl]-2-phenylethenyl]phenyl]- (9CI) (CA INDEX NAME)



IT 722547-38-8P 722547-40-2P  
 (aromatic diamines as electroluminescent materials for organic electroluminescent devices showing good durability)  
 RN 722547-38-8 HCAPLUS

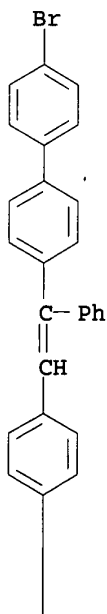
CN 9H-Carbazole, 9-[4-[2-(4-bromophenyl)-2-phenylethenyl]phenyl]-  
(9CI) (CA INDEX NAME)



RN 722547-40-2 HCAPLUS

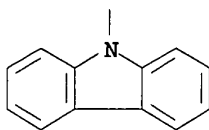
CN 9H-Carbazole, 9-[4-[2-(4'-bromo[1,1'-biphenyl]-4-yl)-2-  
phenylethenyl]phenyl]- (9CI) (CA INDEX NAME)

PAGE 1-A





PAGE 2-A



- IC ICM C07C211-54  
ICS C07C211-58; C09K011-06; H05B033-14; H05B033-22
- CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 25, 27
- ST arom diamine org **electroluminescent** device;  
naphthylphenylamino biphenyl phenyl ethylene org  
**electroluminescent** device
- IT Luminescent substances  
(**electroluminescent**; aromatic diamines as  
**electroluminescent** materials for organic  
**electroluminescent** devices showing good durability)
- IT **Electroluminescent** devices  
(organic; aromatic diamines as **electroluminescent** materials  
for organic **electroluminescent** devices showing good  
durability)
- IT 103497-56-9P 722547-29-7P 722547-30-0P 722547-31-1P  
722547-32-2P 722547-33-3P 722547-34-4P  
722547-35-5P 722547-36-6P  
(aromatic diamines as **electroluminescent** materials for  
organic **electroluminescent** devices showing good  
durability)
- IT 16911-33-4P 271779-47-6P 722547-38-8P 722547-39-9P  
722547-40-2P  
(aromatic diamines as **electroluminescent** materials for  
organic **electroluminescent** devices showing good  
durability)
- IT 86-74-8, Carbazole 90-30-2, N-Phenyl-1-naphthylamine 90-90-4  
98-88-4, Benzoyl chloride 122-39-4, N,N-Diphenylamine, reactions  
603-34-9, N,N-Diphenylaniline 38186-51-5 56354-66-6  
102113-98-4 126150-12-7 722547-37-7  
(aromatic diamines as **electroluminescent** materials for  
organic **electroluminescent** devices showing good  
durability)

L27 ANSWER 10 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2004:530380 HCAPLUS

DOCUMENT NUMBER: 141:96344

TITLE: Organic **electroluminescent** device  
for displays and illumination source and its  
production methodINVENTOR(S): Kita, Hiroshi; Yamada, Taketoshi; Suzurizato,  
Yoshiyuki; Ueda, Noriko

PATENT ASSIGNEE(S): Konica Minolta Holdings Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 65 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

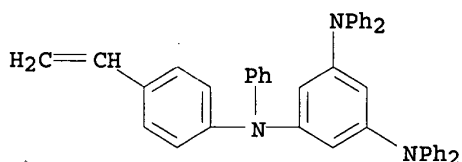
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
------------	------	------	-----------------	------

USHA SHRESTHA EIC 1700 REM 4B28

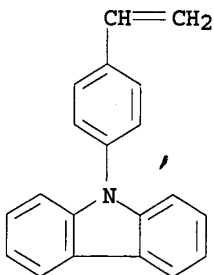
JP 2004185967	A2	20040702	JP 2002-351157	2002 1203
PRIORITY APPLN. INFO.:			JP 2002-351157	2002 1203
AB	The invention relates to an organic <b>electroluminescent</b> device comprising a <b>light-emitting</b> layer containing a phosphorescent dopant and a multifunctioning polymer, wherein, at least, the two of functional mol. units selected from a luminescent host unit, a hole transporting unit, and an electron transporting unit constitute the multifunctioning polymer.			
IT	714976-02-0 714976-16-6 714976-18-8 714976-21-3 714976-35-9 (organic <b>electroluminescent</b> device having phosphorescent dopant and multifunctioning polymer in <b>light emitting</b> layer)			
RN	714976-02-0 HCAPLUS			
CN	1,3,5-Benzenetriamine, N-(4-ethenylphenyl)-N,N',N'',N'''-pentaphenyl-, polymer with 9-(4-ethenylphenyl)-9H-carbazole (9CI) (CA INDEX NAME)			
CM	1			
CRN	714976-01-9			
CMF	C44 H35 N3			



CM 2

CRN 52913-19-6

CMF C20 H15 N



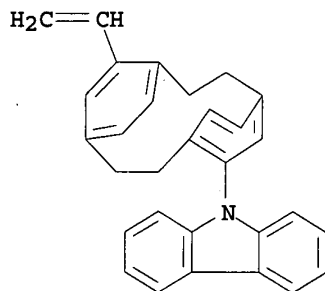
RN 714976-16-6 HCAPLUS  
CN 9H-Carbazole, 9-(11-ethenyltricyclo[8.2.2.2<sup>4,7</sup>]hexadeca-

4,6,10,12,13,15-hexaen-5-yl)-, polymer with 3,5-bis(2,5-dimethylphenyl)-4-(4-ethenylphenyl)-4H-1,2,4-triazole (9CI) (CA INDEX NAME)

CM 1

CRN 714976-15-5

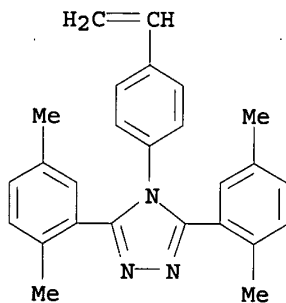
CMF C30 H25 N



CM 2

CRN 714976-14-4

CMF C26 H25 N3



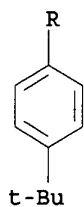
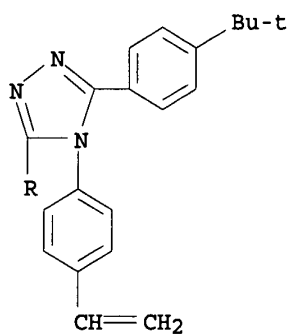
RN 714976-18-8 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, 2,2'-dimethyl-N,N'-di-1-naphthalenyl-N,N'-diphenyl-, polymer with 3,5-bis[4-(1,1-dimethylethyl)phenyl]-4-(4-ethenylphenyl)-4H-1,2,4-triazole and 9-(4-ethenylphenyl)-9H-carbazole (9CI) (CA INDEX NAME)

CM 1

CRN 714976-17-7

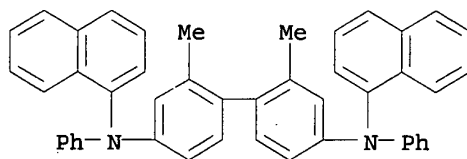
CMF C30 H33 N3



CM 2

CRN 495416-60-9

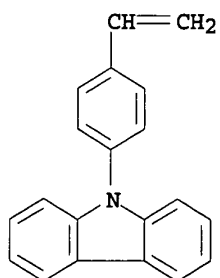
CMF C46 H36 N2



CM 3

CRN 52913-19-6

CMF C20 H15 N

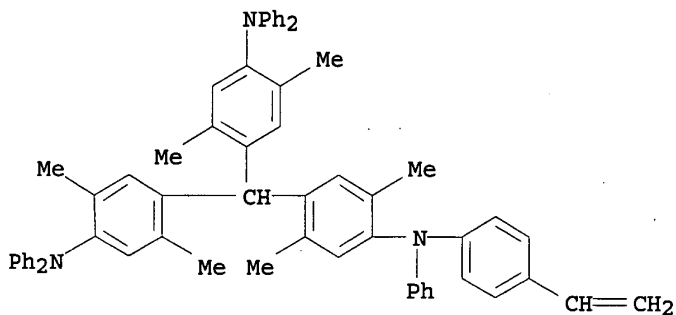


RN 714976-21-3 HCAPLUS  
 CN Benzenamine, 4,4'-[[4-[(4-ethenylphenyl)phenylamino]-2,5-dimethylphenyl]methylene]bis[2,5-dimethyl-N,N-diphenyl-, polymer with 3,5-bis(2,5-dimethylphenyl)-4-(4-ethenylphenyl)-4H-1,2,4-triazole and 9-(4-ethenylphenyl)-3,6-bis(2,4,6-trimethylphenyl)-9H-carbazole (9CI) (CA INDEX NAME)

CM 1

CRN 714976-20-2

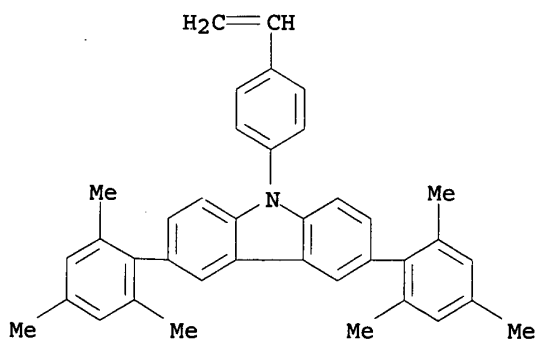
CMF C63 H57 N3



CM 2

CRN 714976-19-9

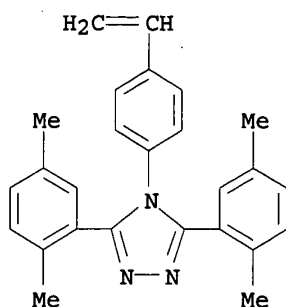
CMF C38 H35 N



CM 3

CRN 714976-14-4

CMF C26 H25 N3



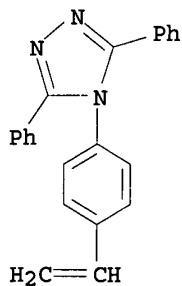
RN 714976-35-9 HCAPLUS

CN 3-Buten-2-one, 1-[[4-[bis[4-(diphenylamino)phenyl]methyl]cyclohexyl]oxy]-, polymer with 4-(4-ethenylphenyl)-3,5-diphenyl-4H-1,2,4-triazole and 9-(11-ethenyltricyclo[8.2.2.2.4,7]hexadeca-4,6,10,12,13,15-hexaen-5-yl)-9H-carbazole (9CI) (CA INDEX NAME)

CM 1

CRN 714976-34-8

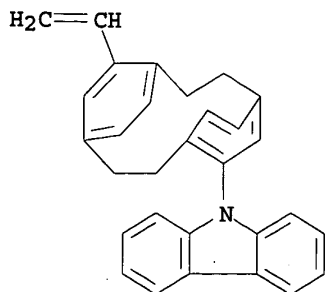
CMF C22 H17 N3



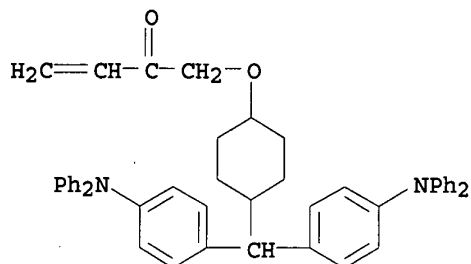
CM 2

CRN 714976-15-5

CMF C30 H25 N



CM 3

CRN 714976-04-2  
CMF C47 H44 N2 O2

- IC ICM H05B033-14  
ICS C08F212-00; C08F220-34; C08F226-12; C08F293-00; C08G081-00;  
C08G085-00; C09K011-06; H05B033-10
- CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 37, 74
- ST org **electroluminescent** device phosphoresce multifunction polymer
- IT **Electroluminescent** devices  
Light sources  
Optical imaging devices  
Phosphorescent substances  
(organic **electroluminescent** device having phosphorescent dopant and multifunctioning polymer in **light emitting** layer)
- IT Polyesters, uses  
Polyethers, uses  
Polyurethanes, uses  
(organic **electroluminescent** device having phosphorescent dopant and multifunctioning polymer in **light emitting** layer)
- IT 714976-00-8 714976-02-0 714976-05-3 714976-08-6  
714976-11-1 714976-13-3 714976-16-6  
714976-18-8 714976-21-3 714976-25-7  
714976-27-9 714976-29-1 714976-31-5 714976-33-7  
714976-35-9 714976-36-0 714976-38-2  
(organic **electroluminescent** device having phosphorescent dopant and multifunctioning polymer in **light emitting** layer)
- IT 94928-86-6 344796-22-1 376367-93-0  
(organic **electroluminescent** device having phosphorescent dopant and multifunctioning polymer in **light emitting** layer)

L27 ANSWER 11 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2004:446941 HCAPLUS

DOCUMENT NUMBER: 141:30822

TITLE: Organic **electroluminescent** element,  
display and illuminatorINVENTOR(S): Oshiyama, Tomohiro; Kinoshita, Motoi; Yamada,  
Taketoshi; Kita, Hiroshi; Fukuda, Mitsuhiro;  
Suzuri, Yoshiyuki; Ueda, Noriko

USHA SHRESTHA EIC 1700 REM 4B28

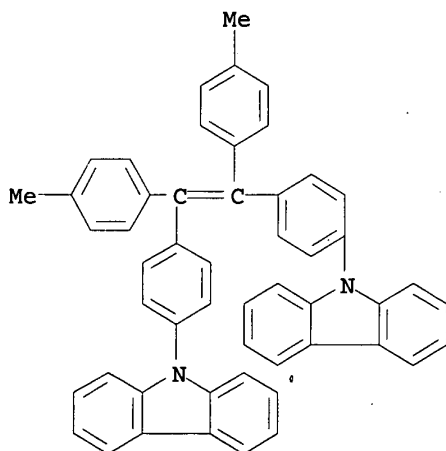
PATENT ASSIGNEE(S): Konica Minolta Holdings Inc., Japan  
 SOURCE: Eur. Pat. Appl., 162 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1424381	A2	20040602	EP 2003-26685	2003 1120
EP 1424381	A3	20050119		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
JP 2004335427	A2	20041125	JP 2003-160609	2003 0605
US 2004115476	A1	20040617	US 2003-718025	2003 1120
JP 2004311410	A2	20041104	JP 2004-49237	2004 0225
JP 2004311412	A2	20041104	JP 2004-49239	2004 0225
JP 2004311414	A2	20041104	JP 2004-49241	2004 0225
PRIORITY APPLN. INFO.:			JP 2002-342193	A 2002 1126
			JP 2003-61201	A 2003 0307
			JP 2003-84071	A 2003 0326
			JP 2003-84073	A 2003 0326
			JP 2003-84075	A 2003 0326
			JP 2003-160609	A 2003 0605
OTHER SOURCE(S):			MARPAT 141:30822	
GI				



\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT  
\*

- AB The invention refers to an organic **electroluminescent** element comprising a component layer between an anode and cathode containing a compound represented by  $X1-(A1)_n$  wherein  $A1 = I$  [ $Ar =$  divalent aromatic hydrocarbon or aromatic heterocyclic;  $R1,2 = H$ , (un)substituted alkyl, cycloalkyl, aralkyl, aryl, alkoxy, aryloxy, or alkenyl, cyano, hydroxyl or halo;  $n_a, n_b = 1 - 4$ ;  $X1 = II - XII$ ;  $R11-14, R21-24, R31-34 = H$ , (un)substituted alkyl, cycloalkyl, aralkyl, aryl, alkoxy, aryloxy, or alkenyl, cyano, hydroxyl or halo;  $R41,42, R61 =$  alkyl;  $R51-52 =$  (un)substituted alkyl, cycloalkyl, aralkyl, aryl, alkoxy, aryloxy or alkenyl, cyano, hydroxyl or halo;  $Xa =$  divalent unsubstituted alkyl-substituted or 6- or 7-membered monocyclic heterocycle;  $R71-78, R81-88, R91-98 = H$ , alkyl, \* represents a linkage site].
- IT **697312-03-1**  
(organic **electroluminescent** element, display and illuminator)
- RN 697312-03-1 HCAPLUS
- CN 9H-Carbazole, 9,9'-[[1,2-bis(4-methylphenyl)-1,2-ethenediyl]di-4,1-phenylene]bis- (9CI) (CA INDEX NAME)



- IC ICM C09K011-06  
ICS H05B033-14; H01L051-20
- CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
- ST **electroluminescent** display carbazole deriv
- IT **Electroluminescent** devices  
(displays; organic **electroluminescent** element, display and illuminator)
- IT **Luminescent** screens  
(**electroluminescent**; organic **electroluminescent** element, display and illuminator)
- IT 419536-32-6 697311-97-0 697311-98-1 697311-99-2  
697312-00-8 697312-01-9 697312-02-0 **697312-03-1**  
697312-04-2 697312-05-3 697312-06-4 697312-07-5

697312-08-6    697312-09-7    697312-10-0    697312-11-1  
 697312-12-2    697312-13-3    697312-14-4    697312-15-5  
 697312-16-6    697312-17-7    697312-18-8    697312-19-9  
 697312-20-2    697312-21-3    697312-22-4    697312-23-5  
 697312-24-6    697312-25-7    697312-26-8    697312-27-9  
 697312-28-0    697312-29-1    697312-30-4    697312-31-5  
 697312-32-6    697312-33-7    697312-34-8    697312-35-9  
 697312-36-0

(organic electroluminescent element, display and illuminator)

L27 ANSWER 12 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2004:319845 HCAPLUS

DOCUMENT NUMBER: 141:130934

TITLE: **Electroluminescence of LEDs**  
 consisting two layers of Alq3 and high Tg,  
**blue-light emitting**  
 branched compounds

AUTHOR(S): Cha, Soon Wook; Jin, Jung-Il

CORPORATE SOURCE: Center for Electro- and Photo-Responsive  
 Molecules; Department of Chemistry, Korea  
 University, Seoul, 136-701, S. Korea

SOURCE: Synthetic Metals (2004), 143(1), 97-101  
 CODEN: SYMEDZ; ISSN: 0379-6779

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Two high glass transition (Tg) (>250°) organic compds., Cz3d  
 and tris-[4-(2-{4-[3,6-bis(4-t-butylphenyl)carbazole-9-  
 yl]phenyl}vinyl)phenyl]amine (TPA-Cz3d), containing three carbazole  
 moieties were used in the construction of bilayer devices  
 consisting of the compds. and tris(8-hydroquinolinato)aluminum  
 (Alq3) layers. TAP-Cz3d has the tri-Ph amine moiety as a core.  
 They themselves performed poorly as **blue-light**  
**emitters** in single layer LEDs. The bilayer devices  
 revealed much improved **electroluminescence** (EL)  
 properties **emitting light** of maximum brightness  
 of 7400-13,000 Cd/m2 with an external quantum efficiency  
 approaching 0.6%. But **emitted light** of the  
 bilayer devices was not from the organic layer but was from Alq3  
 layer indicating that the two compds. was efficient hole  
 transporters. In all the devices, In Sn oxide (ITO)-coated glass  
 and a Li/Al alloy were used as anode and cathode, resp.

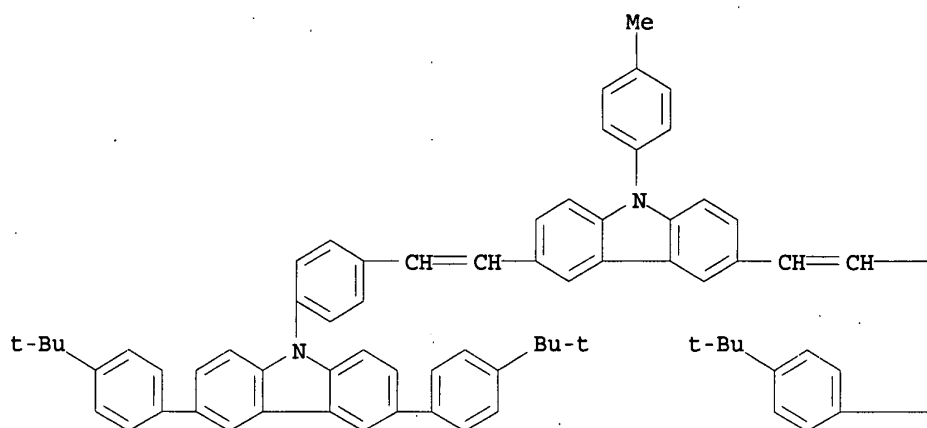
IT 535995-35-8 723343-48-4

(**electroluminescence of LEDs** consisting two  
 layers of Alq3 and high Tg, **blue-light**  
**emitting** branched compds. and optical properties of  
 emitters)

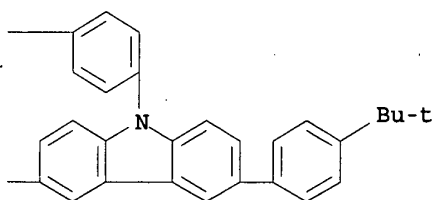
RN 535995-35-8 HCAPLUS

CN 9H-Carbazole, 3,6-bis[2-[4-[3,6-bis[4-(1,1-dimethylethyl)phenyl]-  
 9H-carbazol-9-yl]phenyl]ethenyl]-9-(4-methylphenyl)- (9CI) (CA  
 INDEX NAME)

PAGE 1-A



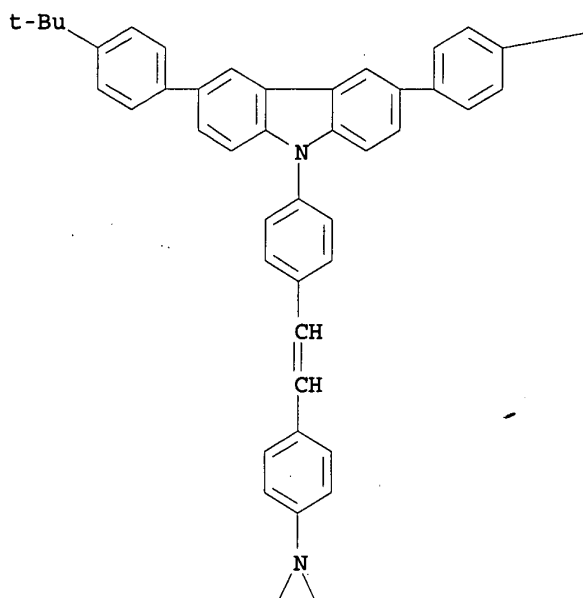
PAGE 1-B



RN 723343-48-4 HCAPLUS

CN Benzenamine, 4-[2-[4-[3,6-bis[4-(1,1-dimethylethyl)phenyl]-9H-carbazol-9-yl]phenyl]ethenyl]-N,N-bis[4-[2-[4-[3,6-bis[4-(1,1-dimethylethyl)phenyl]-9H-carbazol-9-yl]phenyl]ethenyl]phenyl]-(9CI) (CA INDEX NAME)

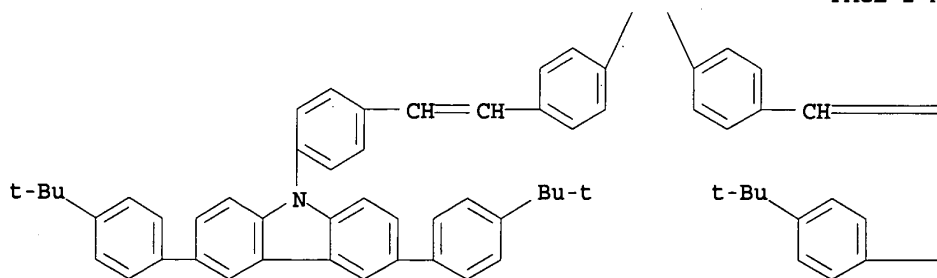
PAGE 1-A



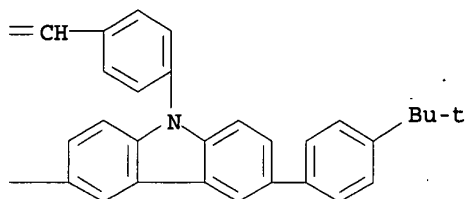
PAGE 1-B

—Bu-t

PAGE 2-A



PAGE 2-B

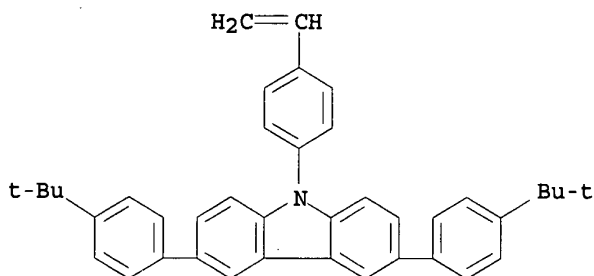


IT 723343-50-8

(electroluminescence of LEDs consisting two layers of Alq3 and high Tg, blue-light emitting branched compds. and optical properties of emitters)

RN 723343-50-8 HCAPLUS

CN 9H-Carbazole, 3,6-bis[4-(1,1-dimethylethyl)phenyl]-9-(4-ethenylphenyl)- (9CI) (CA INDEX NAME)



CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 22

ST **electroluminescence** LED aluminum hydroxyquinolinato complex; blue light emitting branched compd triphenylamine deriv

IT Electric current-potential relationship

**Electroluminescent** devices

Glass substrates

Glass transition temperature

Luminescence

Luminescence, **electroluminescence**

UV and visible spectra

(**electroluminescence** of LEDs consisting two layers of Alq3 and high Tg, blue-light emitting branched compds. and optical properties of emitters)

IT 12798-95-7 50926-11-9, Indium tin oxide

(**electroluminescence** of LEDs consisting two layers of Alq3 and high Tg, blue-light emitting branched compds. and optical properties of emitters)

IT 2085-33-8, Aluminum tris(8-hydroxyquinolinato) 535995-35-8  
723343-48-4

(electroluminescence of LEDs consisting two layers of Alq3 and high Tg, blue-light emitting branched compds. and optical properties of emitters)

IT 4316-58-9, Tris(4-bromophenyl)amine 723343-50-8

(electroluminescence of LEDs consisting two layers of Alq3 and high Tg, blue-light emitting branched compds. and optical properties of emitters)

REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 13 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2004:118629 HCAPLUS

DOCUMENT NUMBER: 140:172298

TITLE: Organic electroluminescent elements with improved brightness and durability and displays using them

INVENTOR(S): Yamada, Taketoshi; Kita, Hiroshi

PATENT ASSIGNEE(S): Konica Minolta Holdings Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 31 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

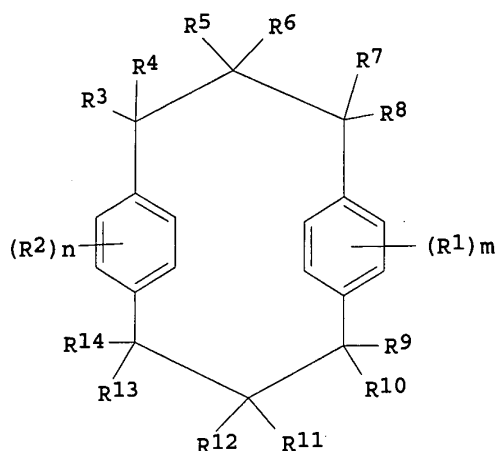
LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	---	-----	-----	
JP 2004047329	A2	20040212	JP 2002-204254	2002 0712
PRIORITY APPLN. INFO.:				2002 0712
				2002 0712

OTHER SOURCE(S): MARPAT 140:172298  
GI



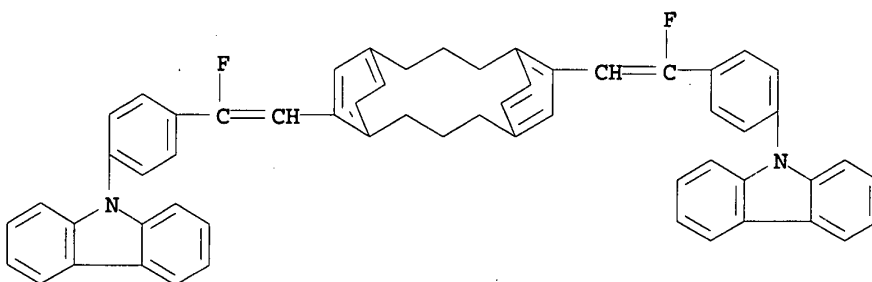
I

AB The elements contain I (R1,2 = substituent; m, n = 1-4; R3-14 = H, substituent), preferably in electron-transfer layers or **light-emitting** layers. The **light-emitting** layers preferably contain I as hosts and phosphors selected from Ir, Os, or Pt compds.

IT 655243-44-0  
(**light-emitting** layer; cyclophane-based organic EL elements with improved brightness and durability for displays)

RN 655243-44-0 HCAPLUS

CN 9H-Carbazole, 9,9'-[tricyclo[10.2.2.25,8]octadeca-5,7,12,14,15,17-hexaene-6,13-diylbis[(1-fluoro-2,1-ethenediyl)-4,1-phenylene]]bis-(9CI) (CA INDEX NAME)



IC ICM H05B033-22

ICS C09K011-06; H05B033-14

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 73

ST org **electroluminescent** element cyclophane host  
brightness; EL display iridium dopant cyclophane durability;  
cyclophane hole blocking electron transfer display

IT **Electroluminescent** devices  
(displays; cyclophane-based organic EL elements with improved

brightness and durability for displays)

IT Luminescent screens  
Phosphors  
(**electroluminescent**; cyclophane-based organic EL  
elements with improved brightness and durability for displays)

IT 94928-86-6 343978-79-0 376367-93-0  
(dopant, **light-emitting** layer;  
cyclophane-based organic EL elements with improved brightness and  
durability for displays)

IT 655243-35-9 655243-36-0 655243-42-8 **655243-44-0**  
655243-45-1 655243-47-3  
(**light-emitting** layer; cyclophane-based  
organic EL elements with improved brightness and durability for  
displays)

IT 655243-33-7 655243-34-8 655243-39-3 655243-46-2  
655243-48-4 655243-49-5  
(**light-emitting** or electron-transfer layer;  
cyclophane-based organic EL elements with improved brightness and  
durability for displays)

L27 ANSWER 14 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2004:57598 HCAPLUS

DOCUMENT NUMBER: 140:101806

TITLE: Carbazole compounds, their polymers, and  
**light-emitting** elements  
using them with excellent blue **light**  
**emission**

INVENTOR(S): Watanabe, Saisuke; Okada, Hisashi

PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 27 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
JP 2004018787	A2	20040122	JP 2002-179094	2002 0619
PRIORITY APPLN. INFO.:				2002 0619
				2002 0619

OTHER SOURCE(S): MARPAT 140:101806

AB The compds. are 3-R1-6-R2-9-R3-substituted carbazole [R1,2 =  
(un)substituted 9-carbazolyl; R3 = H2C:CRX; R = H, substituent; X  
= single bond, divalent organic group].

IT **644979-58-8P 644979-60-2P 644979-62-4P**  
(**light-emitting** layer; carbazole compds.  
for host polymers for organic **electroluminescent** devices  
with good blue **light emission**)

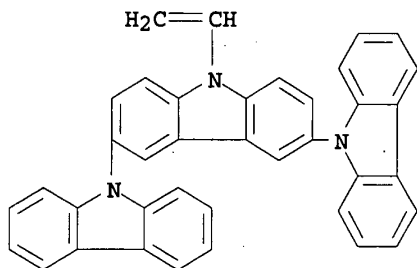
RN 644979-58-8 HCAPLUS

CN 9,3':6',9''-Ter-9H-carbazole, 9'-ethenyl-, homopolymer (9CI) (CA  
INDEX NAME)

CM 1



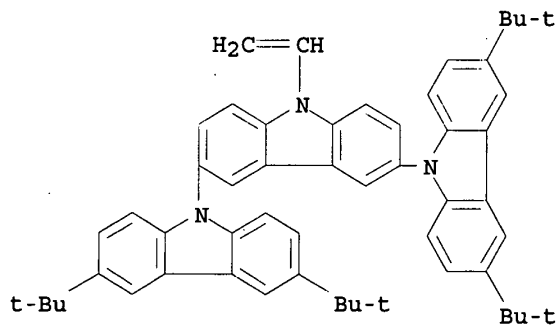
CRN 644979-48-6  
CMF C38 H25 N3



RN 644979-60-2 HCAPLUS  
CN 9,3':6',9''-Ter-9H-carbazole, 3,3'',6,6''-tetrakis(1,1-dimethylethyl)-9'-ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

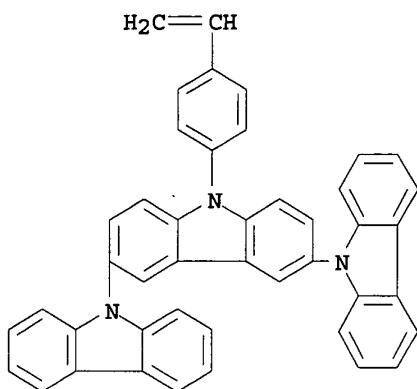
CRN 644979-55-5  
CMF C54 H57 N3



RN 644979-62-4 HCAPLUS  
CN 9,3':6',9''-Ter-9H-carbazole, 9'-(4-ethenylphenyl)-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 644979-56-6  
CMF C44 H29 N3

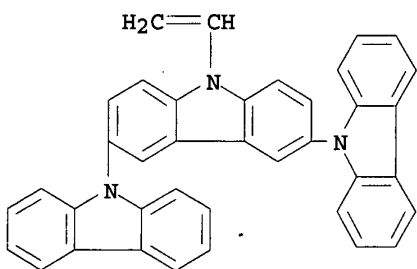


IT 644979-48-6P 644979-55-5P 644979-56-6P

(monomer; carbazole compds. for host polymers for organic electroluminescent devices with good blue light emission)

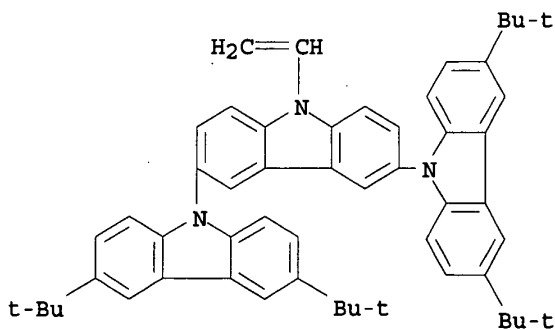
RN 644979-48-6 HCAPLUS

CN 9,3':6',9''-Ter-9H-carbazole, 9'-ethenyl- (9CI) (CA INDEX NAME)



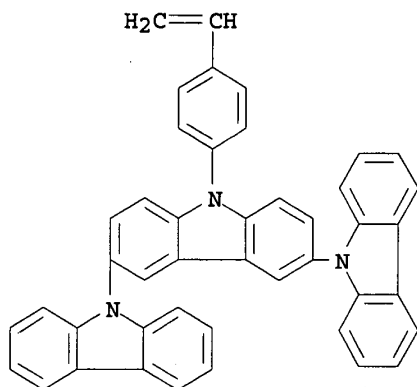
RN 644979-55-5 HCAPLUS

CN 9,3':6',9''-Ter-9H-carbazole, 3,3'',6,6''-tetrakis(1,1-dimethylethyl)-9'-ethenyl- (9CI) (CA INDEX NAME)



RN 644979-56-6 HCAPLUS

CN 9,3':6',9''-Ter-9H-carbazole, 9'-(4-ethenylphenyl)- (9CI) (CA INDEX NAME)

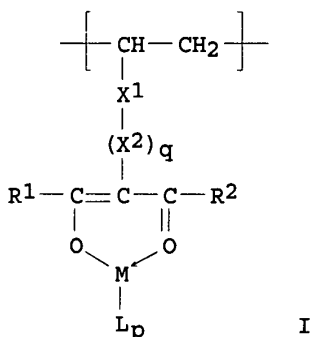


- IC ICM C08F026-12  
ICS C07D209-80; C07D209-88; C09K011-06; H05B033-14; H05B033-22
- CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 35, 38
- ST carbazole compd blue light emission  
efficiency; org electroluminescent device host polymer  
carbazolylcarbazole
- IT **Electroluminescent devices**  
(blue-emitting; carbazole compds. for host polymers for organic  
**electroluminescent devices with good blue light emission**)
- IT 37500-95-1P 606129-90-2P, 9,3':6',9''-Ter-9H-carbazole  
644979-46-4P 644979-50-0P  
(for monomer preparation; carbazole compds. for host polymers for  
organic **electroluminescent devices with good blue light emission**)
- IT 86-74-8, Carbazole 98-53-3, 4-tert-Butylcyclohexanone  
107-06-2, 1,2-Dichloroethane, reactions 2039-82-9,  
4-Bromostyrene 6825-20-3, 3,6-Dibromocarbazole 61765-93-3,  
4-tert-Butylphenylhydrazine  
(for monomer preparation; carbazole compds. for host polymers for  
organic **electroluminescent devices with good blue light emission**)
- IT 155090-83-8, Baytron P  
(hole-transporting layer; carbazole compds. for host polymers  
for organic **electroluminescent devices with good blue light emission**)
- IT 351863-09-7 358974-66-0 370878-69-6 387859-70-3  
(**light-emitting layer**; carbazole compds.  
for host polymers for organic **electroluminescent devices with good blue light emission**)
- IT 644979-58-8P 644979-60-2P 644979-62-4P  
(**light-emitting layer**; carbazole compds.  
for host polymers for organic **electroluminescent devices with good blue light emission**)
- IT 644979-48-6P 644979-55-5P 644979-56-6P  
(monomer; carbazole compds. for host polymers for organic  
**electroluminescent devices with good blue light emission**)

L27 ANSWER 15 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 2004:20778 HCAPLUS  
 DOCUMENT NUMBER: 140:67441  
 TITLE: Phosphors and production process, luminescent  
 composites, organic electroluminescent  
 devices and production method  
 INVENTOR(S): Sakakibara, Mitsuhiko; Yasuda, Hiroyuki;  
 Eriyama, Yuichi  
 PATENT ASSIGNEE(S): Jsr Corporation, Japan  
 SOURCE: PCT Int. Appl., 36 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004003105	A1	20040108	WO 2003-JP8109	2003 0626
W: KR, US RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR JP 2004027088 A2 20040129 JP 2002-187719 2002 0627				
EP 1516901	A1	20050323	EP 2003-736256	2003 0626
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, SK PRIORITY APPLN. INFO.: JP 2002-187719 A 2002 0627				
WO 2003-JP8109				W 2003 0626

GI



AB The invention refers to a phosphor for **electroluminescent** devices comprising a polymer containing the structural unit I [M - di- to tetra-valent metal atom; R<sub>1,2</sub> = H, halo, alkyl, cycloalkyl, aryl or heterocycle; X<sub>1</sub> = phenylene or carbonyloxy; X<sub>2</sub> = alkylene; L = organic ligand; p = 1 - 3; q = 0,1].

IT **639458-41-6D**, iridium complexes  
(phosphors and production process, **luminescent** composites, **organic electroluminescent** devices and production method)

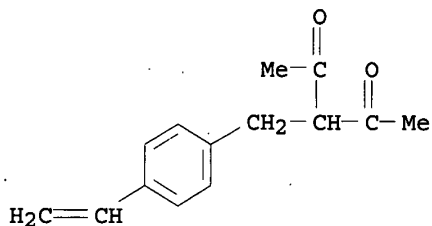
RN 639458-41-6 HCAPLUS

CN 2,4-Pentanedione, 3-[(4-ethenylphenyl)methyl]-, polymer with 9-(4-ethenylphenyl)-9H-carbazole and 2-(4-ethenylphenyl)-5-phenyl-1,3,4-oxadiazole (9CI) (CA INDEX NAME)

CM 1

CRN 59990-73-7

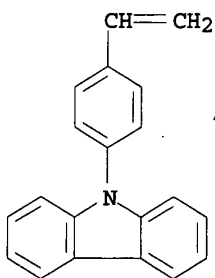
CMF C14 H16 O2



CM 2

CRN 52913-19-6

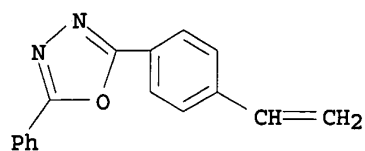
CMF C20 H15 N



CM 3

CRN 17252-75-4

CMF C16 H12 N2 O



IT 639458-41-6

(phosphors and production process, luminescent  
composites, organic electroluminescent devices  
and production method)

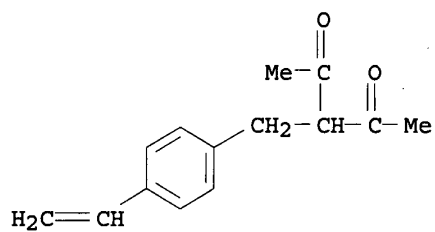
RN 639458-41-6 HCAPLUS

CN 2,4-Pentanedione, 3-[(4-ethenylphenyl)methyl]-, polymer with  
9-(4-ethenylphenyl)-9H-carbazole and 2-(4-ethenylphenyl)-5-phenyl-  
1,3,4-oxadiazole (9CI) (CA INDEX NAME)

CM 1

CRN 59990-73-7

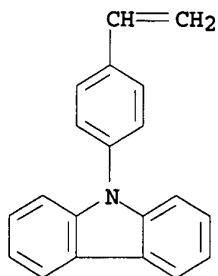
CMF C14 H16 O2



CM 2

CRN 52913-19-6

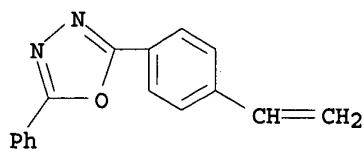
CMF C20 H15 N



CM 3

CRN 17252-75-4

CMF C16 H12 N2 O

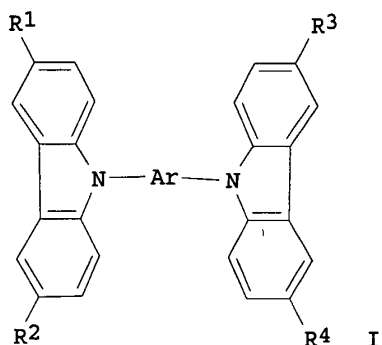


IC ICM C09K011-06  
ICS C08F030-04; H05B033-14; H05B033-10  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
ST phosphor polymer **electroluminescent** device  
IT **Electroluminescent** devices  
Phosphors  
(phosphors and production process, **luminescent** composites, **organic electroluminescent** devices and production method)  
IT 7439-88-5D, Iridium, complexes with vinylcarbazole polymers  
639458-35-8D, iridium complexes 639458-37-0D, iridium complexes  
639458-38-1D, iridium complexes 639458-40-5D, iridium complexes  
639458-41-6D, iridium complexes  
(phosphors and production process, **luminescent** composites, **organic electroluminescent** devices and production method)  
IT 603109-48-4 632327-37-8 639458-35-8 639458-37-0  
639458-38-1 639458-40-5 **639458-41-6** 639478-11-8  
639478-13-0  
(phosphors and production process, **luminescent** composites, **organic electroluminescent** devices and production method)  
REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 16 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN  
ACCESSION NUMBER: 2003:1013100 HCAPLUS  
DOCUMENT NUMBER: 140:67401  
TITLE: **Electroluminescent** devices with carbazole derivative-containing layers  
INVENTOR(S): Hu, Nan-Xing; Aziz, Hany; Popovic, Zoran D.; Hor, Ah-Mee  
PATENT ASSIGNEE(S): Xerox Corporation, USA  
SOURCE: U.S., 24 pp.  
CODEN: USXXAM  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6670054	B1	20031230	US 2002-205632	2002 0725
PRIORITY APPLN. INFO.:			US 2002-205632	2002 0725

OTHER SOURCE(S): MARPAT 140:67401  
GI



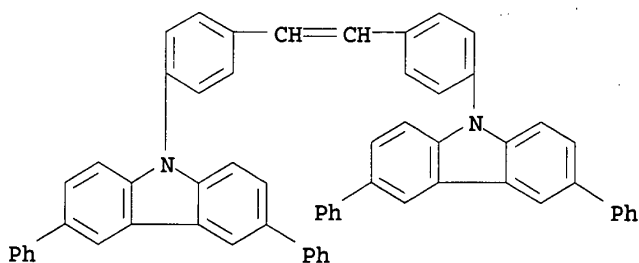
AB **Electroluminescent** devices are described which comprise a first electrode, a second electrode, and, situated between the electrodes, a layer comprising a carbazole are described by the general formula I (R1, R2, R3, and R4 = independently selected hydrocarbyl groups; and Ar = aryl).

IT 638369-63-8

(**electroluminescent** devices with carbazole derivative-containing layers)

RN 638369-63-8 HCAPLUS

CN 9H-Carbazole, 9,9'-(1,2-ethenediyl)-4,1-phenylene)bis[3,6-diphenyl- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C07D209-86

NCL 428690000; 428690000; 428917000; 428704000; 548440000; 548445000; 313504000; 313506000; 252301160; 252301260

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 28, 76

ST **electroluminescent** device carbazole deriv layer

IT Luminescent substances

(**electroluminescent**; **electroluminescent** devices with carbazole derivative-containing layers)

IT **Electroluminescent** devices

(organic; **electroluminescent** devices with carbazole derivative-containing layers)

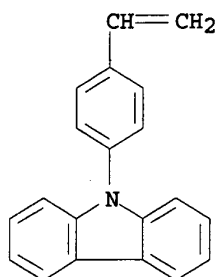


IT 147-14-8, Copper phthalocyanine 123847-85-8 524067-29-6  
 524067-30-9 524067-31-0 524067-32-1 524067-33-2  
 524067-34-3 524067-35-4 524067-36-5 524067-37-6  
 524067-38-7 638369-63-8  
 (electroluminescent devices with carbazole  
 derivative-containing layers)  
 IT 98-80-6, Phenylboric acid 110-71-4, 1,2-Dimethoxyethane  
 3001-15-8, 4,4'-Diiodo-1,1'-biphenyl 6825-20-3,  
 3,6-Dibromocarbazole  
 (electroluminescent devices with carbazole  
 derivative-containing layers)  
 IT 56525-79-2P  
 (electroluminescent devices with carbazole  
 derivative-containing layers)  
 REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L27 ANSWER 17 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 2003:644462 HCAPLUS  
 DOCUMENT NUMBER: 139:188402  
 TITLE: Organic electroluminescent  
 devices/displays and dendritic complex  
 compounds therefor  
 INVENTOR(S): Tokito, Seiji; Tsuzuki, Toshimitsu; Shirasawa,  
 Nobuhiko; Suzuki, Toshiyasu  
 PATENT ASSIGNEE(S): Japan Broadcasting Corp., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 16 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003231692	A2	20030819	JP 2002-351662	2002 1203
PRIORITY APPLN. INFO.:			JP 2001-370628	A 2001 1204

AB Compds. including light-emitting central cores  
 (and hole- or electron-transporting branches), and (full-color)  
 large organic LED including the same in emission layers are sep.  
 claimed. The said cores may have transition (or rare-earth) metal  
 complexes. The LED show long life and high luminescent  
 efficiency.  
 IT 52913-19-6P  
 (organic electroluminescent devices/displays and  
 long-life emission materials therefor)  
 RN 52913-19-6 HCAPLUS  
 CN 9H-Carbazole, 9-(4-ethenylphenyl)- (9CI) (CA INDEX NAME)



- IC ICM C07F015-00  
ICS C09K011-06; H05B033-14; H05B033-22
- CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 29, 73
- ST dendritic iridium complex org **electroluminescent** display; charge transporting branch iridium complex LED
- IT Rare earth complexes  
(dendritic, **electroluminescent**; organic **electroluminescent** devices/displays and long-life emission materials therefor)
- IT Transition metal complexes  
(dendritic, **electroluminescent**; organic **electroluminescent** devices/displays and long-life emission materials therefor)
- IT **Electroluminescent** devices  
(displays; organic **electroluminescent** devices/displays and long-life emission materials therefor)
- IT Luminescent substances  
(**electroluminescent**, phosphorescent; organic **electroluminescent** devices/displays and long-life emission materials therefor)
- IT Luminescent screens  
(**electroluminescent**; organic **electroluminescent** devices/displays and long-life emission materials therefor)
- IT **Electroluminescent** devices  
(organic **electroluminescent** devices/displays and long-life emission materials therefor)
- IT 578715-38-5P 578715-39-6P 578715-41-0P 578715-43-2P  
(emission layers; organic **electroluminescent** devices/displays and long-life emission materials therefor)
- IT 578715-44-3P  
(intermediates; del borg. **electroluminescent** devices/displays and long-life emission materials therefor)
- IT 578715-46-5P  
(intermediates; reorg. **electroluminescent** devices/displays and long-life emission materials therefor)
- IT 578710-59-5P 578710-61-9P  
(ligands; organic **electroluminescent** devices/displays and long-life emission materials therefor)
- IT 52913-19-6P 578710-60-8P  
(organic **electroluminescent** devices/displays and long-life emission materials therefor)
- IT 86-74-8, Carbazole 92-66-0, 4-Bromobiphenyl 280-64-8, 9-BBN 1461-22-9, Tributyltin chloride 2039-82-9, 4-Bromostyrene 15702-05-3, Sodium iridium chloride (Na3IrCl6) 57102-42-8,

9-(4-Bromophenyl)carbazole 63996-36-1, 2-(4-Bromophenyl)pyridine  
(organic **electroluminescent** devices/displays and  
long-life emission materials therefor)

L27 ANSWER 18 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2003:417031 HCAPLUS

DOCUMENT NUMBER: 139:157064

TITLE: Field-dependent properties of  
**electroluminescent** devices based on  
DCM-doped poly(p-phenylene vinylene)  
derivatives

AUTHOR(S): Zhong, Guolun; Kim, Kyungkon; Lee, Dong Won;  
Jin, Jung-Il

CORPORATE SOURCE: Department of Chemistry and Center for Photo-  
and Electro-Responsive Molecules, Korea  
University, Seoul, 136-701, S. Korea

SOURCE: Synthetic Metals (2003), 137(1-3), 1015-1016  
CODEN: SYMEDZ; ISSN: 0379-6779

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

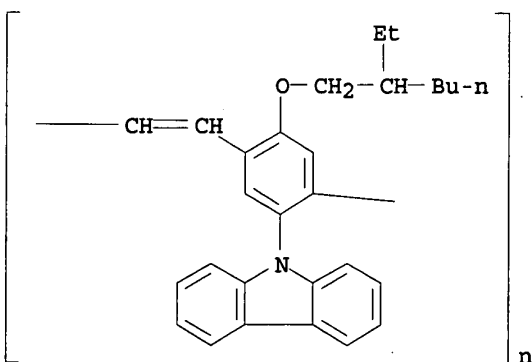
AB The authors fabricated the single layer **electroluminescent**  
(EL) devices using poly[2-(carbazol-9-yl)-5-(2-ethylhexyloxy)-1,4-  
phenylene vinylene] (CzEh-PPV) and poly[2-{4-[5-(4-tert-  
butylphenyl)-1,3,4-oxadiazolyl]-phenyl}-5-(2-ethylhexyloxy)-1,4-  
phenylene vinylene] (OxdEh-PPV) doped with varying weight percent of  
4-(dicyanomethylene)-2-Me-6-[p-(dimethylamino)styryl]-4H-pyran  
(DCM-1). Field-dependence of the emission spectra of the EL  
devices was studied in detail: the EL device constructed with  
CzEh-PPV/DCM-1 reveals a strong field-dependence in its EL  
spectrum and the emission by DCM-1 is intensified as the applied  
elec. field is increased, whereas the device of OxdEh-PPV/DCM-1  
shows an enhanced emission from OxdEh-PPV with increasing field.

IT 352675-59-3

(DCM-1-doped; field-dependent properties of **LEDs**  
based on DCM-doped poly(p-phenylene vinylene) derivs.)

RN 352675-59-3 HCAPLUS

CN Poly[[2-(9H-carbazol-9-yl)-5-[(2-ethylhexyl)oxy]-1,4-phenylene]-  
1,2-ethenediyl] (9CI) (CA INDEX NAME)



CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related  
Properties)

Section cross-reference(s): 36

ST LED polymer phenylene vinylene deriv dopant DCM1; band structure  
LED polymer phenylene vinylene deriv dopant DCM1; exciton LED  
polymer phenylene vinylene deriv dopant DCM1;  
**electroluminescence** polymer phenylene vinylene deriv  
dopant DCM1

IT Poly(arylenealkenylenes)  
(field-dependent properties of **LEDs** based on  
DCM-doped poly(p-phenylene vinylene) derivs.)

IT Band structure  
Exciton  
HOMO (molecular orbital)  
LUMO (molecular orbital)  
(field-dependent properties of **LEDs** based on  
DCM-doped poly(p-phenylene vinylene) derivs. in relation to)

IT Luminescence, **electroluminescence**  
(of DCM-doped poly(p-phenylene vinylene) derivs.)

IT **Electroluminescent** devices  
(thin-film; field-dependent properties of **LEDs** based  
on DCM-doped poly(p-phenylene vinylene) derivs.)

IT 352675-59-3 569679-80-7  
(DCM-1-doped; field-dependent properties of **LEDs**  
based on DCM-doped poly(p-phenylene vinylene) derivs.)

IT 51325-91-8, DCM-1  
(field-dependent properties of **LEDs** based on  
DCM-doped poly(p-phenylene vinylene) derivs.)

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L27 ANSWER 19 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN  
ACCESSION NUMBER: 2003:172119 HCAPLUS  
DOCUMENT NUMBER: 138:228995  
TITLE: Cyano-substituted diamine derivative  
**electroluminescent** material and  
**electroluminescent** device

INVENTOR(S): Tamano, Michiko; Yauchi, Hiroyuki  
PATENT ASSIGNEE(S): Toyo Ink Mfg. Co., Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 26 pp.  
CODEN: JKXXAF

DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003068462	A2	20030307	JP 2001-190767	2001 0625
PRIORITY APPLN. INFO.:			JP 2001-174997	A 2001 0611

OTHER SOURCE(S): MARPAT 138:228995

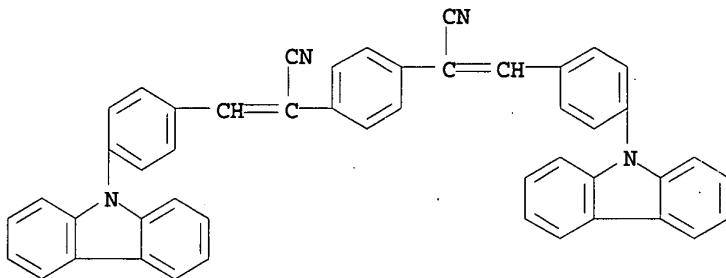
AB The invention refers to an organic **electroluminescent**  
material R4R3N-Ar3-(R12C:CR11)mCR5:CR6Ar1CR7:R8 (CR9:CR10)nAr2NR1R2  
[ Ar1-3 = single ring or condensed multiring divalent organic  
substituent; R1-12 = H, cyano, (un)substituted alkyl or aryl,  
wherein either R5 or R6 = cyano, and either R6 or R7 = cyano; n, m

= 0 - 10].

IT 500800-82-8

(cyano-substituted diamine derivative **electroluminescent** material and **electroluminescent** device)

RN 500800-82-8 HCAPLUS

CN 1,4-Benzenediacetonitrile,  $\alpha,\alpha'$ -bis[[4-(9H-carbazol-9-yl)phenyl]methylene]- (9CI) (CA INDEX NAME)

IC ICM H05B033-14

ICS C09K011-06; H05B033-22

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST **electroluminescent** device cyano diamineIT **Electroluminescent** devices(cyano-substituted diamine derivative **electroluminescent** material and **electroluminescent** device)

IT 41737-79-5 62025-13-2 63804-60-4 500800-81-7

500800-82-8 500800-83-9 500800-84-0 500800-85-1

500800-86-2 500800-87-3 500800-88-4 500800-89-5

500800-90-8 500800-91-9 500800-92-0 500800-93-1

500800-94-2 500800-95-3 500800-96-4

(cyano-substituted diamine derivative **electroluminescent** material and **electroluminescent** device)

IT 500800-79-3P 500800-80-6P 500800-97-5P 500800-98-6P

(cyano-substituted diamine derivative **electroluminescent** material and **electroluminescent** device)IT 100-10-7, 4-N,N-Dimethylaminobenzaldehyde 620-93-9 623-27-8,  
1,4-Benzenedicarboxaldehyde 626-22-2, 1,3-Benzenediacetonitrile  
6203-18-5, 4-N,N-Dimethylaminocinnamaldehyde 16532-79-9,  
4-Bromobenzyl cyanide(cyano-substituted diamine derivative **electroluminescent** material and **electroluminescent** device)

IT 500800-78-2P

(cyano-substituted diamine derivative **electroluminescent** material and **electroluminescent** device)

L27 ANSWER 20 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2003:132150 HCAPLUS

DOCUMENT NUMBER: 139:14094

TITLE: A field-dependent organic LED consisting of  
two new high Tg blue light**emitting** organic layers: a possibility  
of attainment of a white light source

AUTHOR(S): Cha, Soon Wook; Jin, Jung-Il

CORPORATE SOURCE: Department of Chemistry and the Center for  
Electro- and Photo-Responsive Molecules, Korea

SOURCE: University, Seoul, 136-701, S. Korea  
Journal of Materials Chemistry (2003), 13(3),  
479-484  
CODEN: JMACEP; ISSN: 0959-9428

PUBLISHER: Royal Society of Chemistry

DOCUMENT TYPE: Journal

LANGUAGE: English

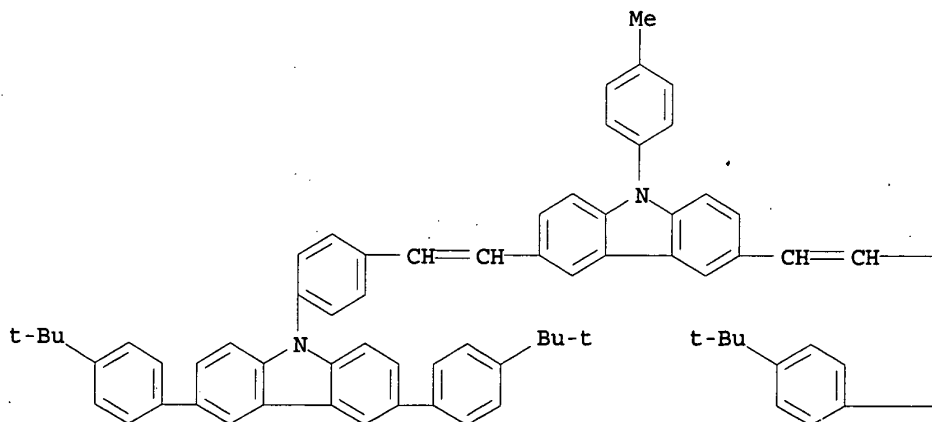
AB Two new blue light emitting trimeric compds.  
of the Y-shape type having high glass transition temps. were  
synthesized and EL behavior of LED devices consisting of bilayers  
of the two compds. was studied. One of the compds. is of  
hole-transporting type containing carbazole moieties, whereas the  
other is of electron-transporting type bearing phenyloxadiazole  
moieties. The bilayer LED devices exhibit a strong  
field-dependence and emit white light  
(simultaneous light-emittance in blue, green  
and red regions), at high applied elec. fields. Increased  
interfacial formation of exciplexes at stronger external fields  
appears to be responsible for this field-dependence.

IT 535995-35-8P  
(film and in solution; field-dependent organic LED  
consisting of two new high Tg blue-light-  
emitting organic layers as possibility of attainment of  
white light source)

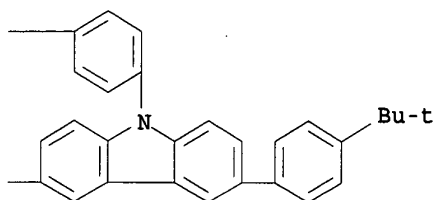
RN 535995-35-8 HCAPLUS

CN 9H-Carbazole, 3,6-bis[2-[4-[3,6-bis[4-(1,1-dimethylethyl)phenyl]-  
9H-carbazol-9-yl]phenyl]ethenyl]-9-(4-methylphenyl)- (9CI) (CA  
INDEX NAME)

PAGE 1-A



PAGE 1-B



- CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 22, 76
- ST blue luminescent carbazole deriv phenyloxadiazole  
**electroluminescent** device white OLED
- IT Luminescence, **electroluminescence**  
 (blue; field-dependent organic **LED** consisting of two new high Tg blue-light-emitting organic layers as possibility of attainment of white light source)
- IT Luminescent substances  
 (**electroluminescent**, blue-emitting; field-dependent organic **LED** consisting of two new high Tg blue-light-emitting organic layers as possibility of attainment of white light source)
- IT Glass transition temperature  
**Luminescence**  
 UV and visible spectra  
 (field-dependent **organic LED** consisting of two new high Tg blue-light-emitting organic layers as possibility of attainment of white light source)
- IT Exciplex  
 (interfacial formation of; field-dependent organic **LED** consisting of two new high Tg blue-light-emitting organic layers as possibility of attainment of white light source)
- IT Electric current carriers  
 (transport; of two new high Tg blue light **emitting** organic layers)
- IT **Electroluminescent** devices  
**Light sources**  
 (white-emitting; field-dependent organic **LED** consisting of two new high Tg blue-light-emitting organic layers as possibility of attainment of white light source)
- IT 12798-95-7 50926-11-9, Indium tin oxide  
 (electrode; field-dependent organic **LED** consisting of two new high Tg blue-light-emitting organic layers as possibility of attainment of white light source)
- IT 86-74-8, Carbazole 99-75-2 106-38-7, 4-Bromotoluene

302-01-2, Hydrazine, reactions 1710-98-1, 4-tert-Butylbenzoyl chloride 23950-59-6, 3,5-Dibromobenzoyl chloride 123324-71-0, 4-tert-Butylphenylboronic acid  
(field-dependent organic LED consisting of two new high Tg blue light emitting organic layers prepared using)

IT 19264-73-4P

(field-dependent organic LED consisting of two new high Tg blue light emitting organic layers prepared using)

IT 535995-35-8P 535995-36-9P

(film and in solution; field-dependent organic LED consisting of two new high Tg blue-light-emitting organic layers as possibility of attainment of white light source)

REFERENCE COUNT: 51 THERE ARE 51 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 21 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2003:56356 HCAPLUS

DOCUMENT NUMBER: 138:98068

TITLE: Electroluminescent styryl compounds and yellow-to-red-emitting electroluminescent devices therefrom

INVENTOR(S): Tamano, Michiko; Yauchi, Hiroyuki

PATENT ASSIGNEE(S): Toyo Ink Mfg. Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 25 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003020477	A2	20030124	JP 2001-207189	2001 0709

PRIORITY APPLN. INFO.:

JP 2001-207189

2001 0709

OTHER SOURCE(S): MARPAT 138:98068

AB Styryl compds. R1R2NAr2(CR3:CR4)mCR5:CR6(CR7:CR8)nAr1 [Ar1 = monovalent cyclic residue; Ar2 = bivalent cyclic residue; R1-R8 = H, cyano, alkyl, aryl (R5 and/or R6 is cyano); n, m = 0-10] and LED (electroluminescent devices) having layers of the compds. are claimed. The devices exhibit long life and high luminance.

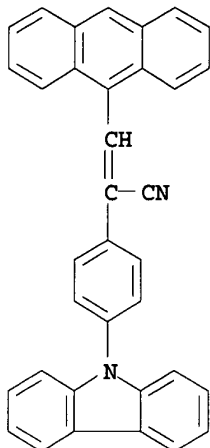
IT 483981-24-4

(emission layers; electroluminescent styryl compds. for yellow-to-red-emitting LED with long life and high luminance)

RN 483981-24-4 HCAPLUS

CN Benzeneacetonitrile,  $\alpha$ -(9-anthracenylmethylene)-4-(9H-carbazol-9-yl)- (9CI) (CA INDEX NAME)





- IC ICM C09K011-06  
ICS C09K011-06; C07C255-42; C07D265-38; C07D307-54; C07D333-60;  
C07D471-04; H05B033-14; C07D209-86; C07D333-24
- CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 25, 74
- ST **electroluminescent** styryl deriv red yellow emission luminance
- IT **Electroluminescent** devices  
(displays; **electroluminescent** styryl compds. for yellow-to-red-emitting LED with long life and high luminance)
- IT **Electroluminescent** devices  
(**electroluminescent** styryl compds. for yellow-to-red-emitting LED with long life and high luminance)
- IT Luminescent screens  
Luminescent substances  
(**electroluminescent**; **electroluminescent** styryl compds. for yellow-to-red-emitting LED with long life and high luminance)
- IT 21994-54-7P 483981-23-3P 483981-25-5P 483981-26-6P  
483981-29-9P  
(emission layers; **electroluminescent** styryl compds. for yellow-to-red-emitting LED with long life and high luminance)
- IT 483981-20-0 483981-21-1 483981-22-2 **483981-24-4**  
483981-27-7 483981-28-8 483981-30-2 483981-31-3  
483981-32-4 483981-33-5 483981-34-6 483981-35-7  
483981-36-8 483981-37-9  
(emission layers; **electroluminescent** styryl compds. for yellow-to-red-emitting LED with long life and high luminance)
- IT 108062-07-3P 443779-80-4P  
(in preparation of **electroluminescent** styryl compds. for high-luminance and long-life LED)
- IT 100-10-7, 4-N,N-Dimethylaminobenzaldehyde 100-52-7,  
Benzaldehyde, reactions 620-93-9 642-31-9, 9-Formylanthracene  
2947-61-7 6203-18-5, 4-N,N-Dimethylaminocinnamaldehyde  
16532-79-9, 4-Bromobenzylcyanide  
(in preparation of **electroluminescent** styryl compds. for

high-luminance and long-life LED)

L27 ANSWER 22 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 2002:313487 HCAPLUS  
 DOCUMENT NUMBER: 136:348064  
 TITLE: Organic electroluminescent device  
 INVENTOR(S): Sakakibara, Mitsuhiko  
 PATENT ASSIGNEE(S): JSR Ltd., Japan; Futaba Denshi Kogyo Co.,  
 Ltd.; Kokusaki Kiban Zairyo Kenkyusho K. K.  
 SOURCE: Jpn. Kokai Tokkyo Koho, 14 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002124390	A2	20020426	JP 2000-314941	2000 1016
PRIORITY APPLN. INFO.:			JP 2000-314941	2000 1016

GI

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT  
 \*

AB The invention relates to an organic electroluminescent device, comprising a hole transport layer made of the copolymer having the structural units represented by I and II in 5:95.apprx.95:5 mol ratio [R1 = H, alkyl, aryl; R2-5 = H, alkyl, alkoxy; X1 = p-C6H4CH2OCH2 and p-C6H4CH2; Z = OCO, CONH, and CONHCO; m, n = 0 or 1; R6-8 = H, alkyl, aryl; X2 = phenylene or methylenephenylene; p = 0 or 1].

IT 392658-32-1  
 (hole transport material for organic electroluminescent device)

RN 392658-32-1 HCAPLUS

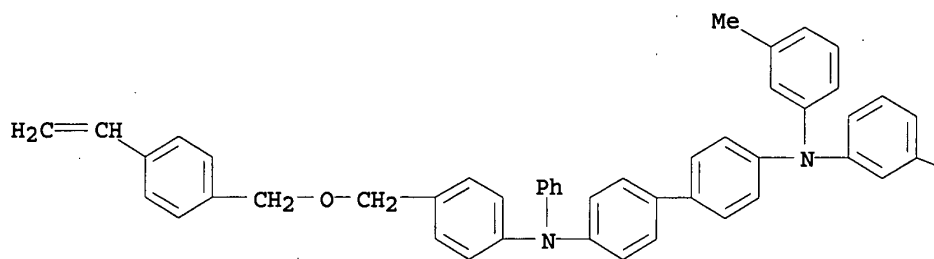
CN [1,1'-Biphenyl]-4,4'-diamine, N-[4-[[4-ethenylphenyl)methoxy)methyl]phenyl]-N',N'-bis(3-methylphenyl)-N-phenyl-, polymer with 9-(4-ethenylphenyl)-9H-carbazole (9CI) (CA INDEX NAME)

CM 1

CRN 392658-30-9

CMF C48 H42 N2 O

PAGE 1-A



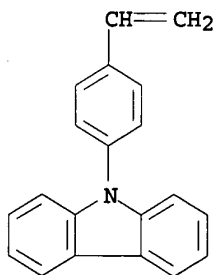
PAGE 1-B

Me

CM 2

CRN 52913-19-6

CMF C20 H15 N



IC ICM H05B033-22  
 ICS C08F212-32; C09K011-06; H05B033-14  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 38  
 ST org electroluminescent device hole transport material  
 IT **Electroluminescent** devices  
 (hole transport material for organic **electroluminescent** device)  
 IT 392658-29-6 392658-31-0 392658-32-1  
 (hole transport material for organic **electroluminescent** device)

L27 ANSWER 23 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 2002:185254 HCAPLUS

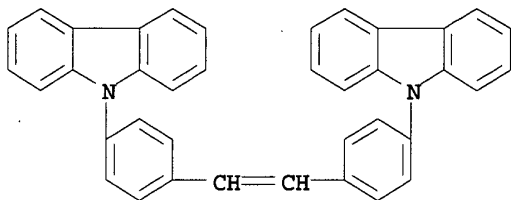
USHA SHRESTHA EIC 1700 REM 4B28

DOCUMENT NUMBER: 136:239204  
 TITLE: Low molecular chromophore compounds and  
**electroluminescence** display device  
 comprising the same  
 INVENTOR(S): Park, Jong-Wook  
 PATENT ASSIGNEE(S): Vistorm Co., Ltd., S. Korea  
 SOURCE: PCT Int. Appl., 48 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002020694	A1	20020314	WO 2001-KR1485	2001 0831
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
KR 2001044090	A	20010605	KR 2000-52756	2000 0906
AU 2001082664	A5	20020322	AU 2001-82664	2001 0831
KR 2002020204	A	20020314	KR 2001-54417	2001 0905
PRIORITY APPLN. INFO.:			KR 2000-52756	A 2000 0906
			WO 2001-KR1485	W 2001 0831

OTHER SOURCE(S): MARPAT 136:239204  
 AB Low mol. weight chromophore compds. for **electroluminescent**  
 display devices are described which comprise compds. having  
 electron donor groups selected from carbazole, carbazole derivative,  
 or aromatic amine-based analog groups with a central stilbene group  
 for control of the luminescence region. The chromophore compds.  
 may be used along with  $\geq 1$  dopant such as dicarbazolyl  
 azobenzene, fluorenyl diacetylene derivs., perylene, carbazole,  
 carbazole derivs., coumarin compds. and 4-(dicyanomethylene)-2-  
 methyl-6-(1,1,7,7-tetramethyljulodiny-9-enyl)-4H-pyran. Methods  
 for preparing the chromophores are also described.  
**Electroluminescent** display devices employing the  
 chromophores in  $\geq 1$  of the **electroluminescent**,

hole transport, or electron transport layers are also described.  
 IT 96710-93-9P  
 (low mol. weight chromophore compds. and their preparation and  
**electroluminescent** display devices using them)  
 RN 96710-93-9 HCAPLUS  
 CN 9H-Carbazole, 9,9'-(1,2-ethenediyl)di-4,1-phenylene)bis- (9CI) (CA  
 INDEX NAME)



IC ICM C09K011-06  
 ICS C07D209-82; C07C015-52  
 CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and  
 Other Reprographic Processes)  
 Section cross-reference(s): 28, 73, 76  
 ST **electroluminescent** display chromophore carbazole  
 stilbene compd  
 IT **Electroluminescent** devices  
 Luminescent substances  
 (low mol. weight chromophore compds. and their preparation and  
**electroluminescent** display devices using them)  
 IT 96710-93-9P  
 (low mol. weight chromophore compds. and their preparation and  
**electroluminescent** display devices using them)  
 IT 86-73-7D, Fluorene, derivs. 86-74-8D, Carbazole, derivs.  
 91-64-5D, Coumarin, derivs. 198-55-0, Perylene 159788-00-8  
 251316-79-7  
 (low mol. weight chromophore compds. and their preparation and  
**electroluminescent** display devices using them)  
 IT 86-74-8, Carbazole  
 (low mol. weight chromophore compds. and their preparation and  
**electroluminescent** display devices using them)  
 IT 106-37-6, 1,4-Dibromobenzene 109-72-8, n-Butyllithium, reactions  
 459-57-4, 4-Fluorobenzaldehyde 540-59-0, 1,2-Dichloroethylene  
 1461-22-9 2765-14-2, 4,4'-Dibromostilbene  
 (low mol. weight chromophore compds. and their preparation and  
**electroluminescent** display devices using them)  
 IT 14275-61-7P 57102-42-8P, 1-(9-N-Carbazolyl)-4-bromobenzene  
 110677-45-7P  
 (low mol. weight chromophore compds. and their preparation and  
**electroluminescent** display devices using them)  
 REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

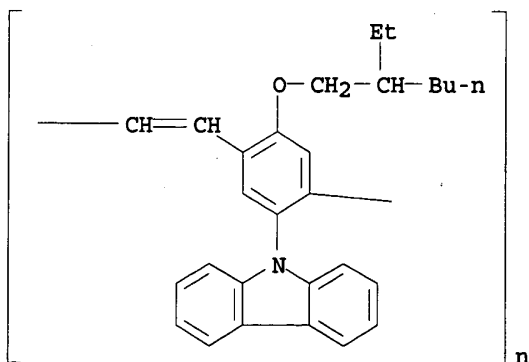
L27 ANSWER 24 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 2002:179061 HCAPLUS  
 DOCUMENT NUMBER: 137:70174  
 TITLE: Mechanism of one- and two-photon absorption  
 induced photoluminescence in PPV type,  
**electroluminescent** polymer

AUTHOR(S): Lee, Geon Joon; Kim, Kyungkon; Jin, Jung-Il  
 CORPORATE SOURCE: Center for Electro- and Photo-Responsive Molecules, Korea University, Seoul, 136-701, S. Korea  
 SOURCE: Optics Communications (2002), 203(1-2), 151-157  
 CODEN: OPCOB8; ISSN: 0030-4018  
 PUBLISHER: Elsevier Science B.V.  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

AB The authors report the luminescence properties in a poly(phenylenevinylene) derivative with the carbazole pendent and alkoxy group (CzEH-PPV). The two-photon excitation spectrum showed that the threshold energy ( $2 \text{ phcnst.} = 2.64 \text{ eV}$ ) of two-photon absorption (TPA) is larger than that ( $2.34 \text{ eV}$ ) expected by 1-photon excitation spectra. This implies that the two- and 1-photon absorptions satisfy different selection rules. Meanwhile, the two- and 1-photon absorption (OPA) induced photoluminescences (PLs) occur from the same exciton band that has a double min. adiabatic potential. The lifetimes of the upper and lower exciton states are 280 and 370 ps, resp. By comparing the PL spectrum of CzEH-PPV film to its **electroluminescence** spectrum of single-layer CzEH-PPV **light-emitting** device (ITO/CzEH-PPV/Al), the species generated by OPA or TPA are the charged carriers. For OPA-PL, the excitations having the pulse-energy larger than  $2.3 \text{ } \mu\text{J}$  at  $2.96 \text{ eV}$  produce a spectrally narrowed emission band with its maximum located at  $2.14 \text{ eV}$  with the spectral width of  $23 \text{ meV}$ . This is ascribed to the amplified spontaneous emission enhanced by the optical wave guiding in the polymer film.

IT 352675-59-3  
 (mechanism of one- and two-photon absorption induced photoluminescence in PPV type, **electroluminescent** polymer)

RN 352675-59-3 HCAPLUS  
 CN Poly[[2-(9H-carbazol-9-yl)-5-[(2-ethylhexyl)oxy]-1,4-phenylene]-1,2-ethenediyl] (9CI) (CA INDEX NAME)



CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 36  
 ST two photon absorption luminescence PPV **electroluminescent** polymer

IT Electric current carriers  
**Electroluminescent devices**  
 Energy level  
 Exciton  
 IR spectra  
 Luminescence  
 Luminescence, **electroluminescence**  
 Optical absorption  
 Two-photon absorption  
 (mechanism of one- and two-photon absorption induced  
 photoluminescence in PPV type, **electroluminescent**  
 polymer)

IT 7429-90-5, Aluminum, uses 50926-11-9, Indium tin oxide  
 (mechanism of one- and two-photon absorption induced  
 photoluminescence in PPV type, **electroluminescent**  
 polymer)

IT 352675-59-3  
 (mechanism of one- and two-photon absorption induced  
 photoluminescence in PPV type, **electroluminescent**  
 polymer)

REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L27 ANSWER 25 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 2001:376206 HCAPLUS  
 DOCUMENT NUMBER: 135:172767  
 TITLE: Highly efficient **light-emitting** diodes based on an  
 organic-soluble poly (p-phenylenevinylene)  
 derivative carrying both the hole-transporting  
 carbazole moiety and the 2-ethylhexyloxy group

AUTHOR(S): Kim, K.; Hong, Y.-R.; Jin, J.-I.  
 CORPORATE SOURCE: Department of Chemistry and Center for Photo-  
 and Electro-Responsive Molecules, Korea  
 University, Anam-Dong, Seoul, 136-701, S.  
 Korea

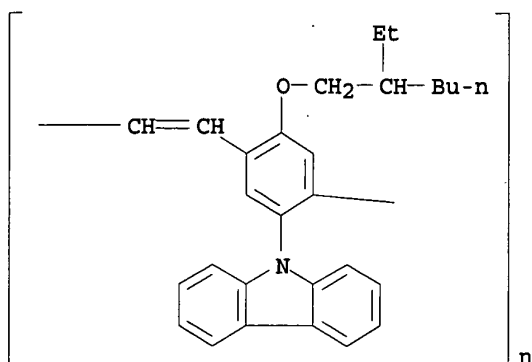
SOURCE: Synthetic Metals (2001), 121(1-3), 1705-1706  
 CODEN: SYMEDZ; ISSN: 0379-6779

PUBLISHER: Elsevier Science S.A.  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

AB The authors synthesized a new polymer that carries the  
 electron-donating alkoxy group and carbazole group attached to the  
 phenylene ring and fabricated mono and bilayer devices consisting  
 of electron transporting tris(8-quinolinato)aluminum and the  
 polymer layers. The monolayer device showed low turn-on voltage  
 and high external quantum efficiency (0.01%). Also external  
 quantum efficiency of its bilayer device was 0.23%.

IT 352675-59-3  
 (highly efficient **light-emitting** diodes  
 based on organic-soluble poly (p-phenylenevinylene) derivative carrying  
 both hole-transporting carbazole moiety and 2-ethylhexyloxy  
 group)

RN 352675-59-3 HCAPLUS  
 CN Poly[[2-(9H-carbazol-9-yl)-5-[(2-ethylhexyl)oxy]-1,4-phenylene]-  
 1,2-ethenediyl] (9CI) (CA INDEX NAME)



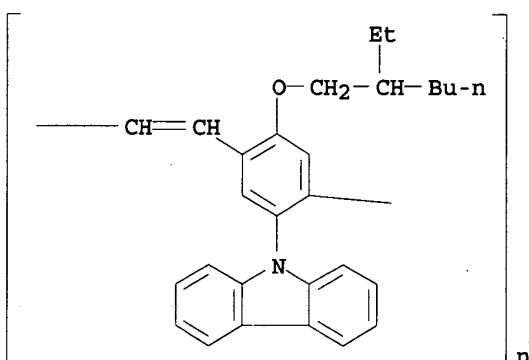
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 36, 38  
 ST **light emitting diode** org soluble  
 polyphenylenevinylene deriv  
 IT **Electroluminescent** devices  
 Energy level  
 Luminescence  
 Luminescence, **electroluminescence**  
 (highly efficient **light-emitting** diodes  
 based on organic-soluble poly (p-phenylenevinylene) derivative carrying  
 both hole-transporting carbazole moiety and 2-ethylhexyloxy  
 group)  
 IT 2085-33-8, Aluminum tris(8-hydroxyquinolinato) 352675-59-3  
 (highly efficient **light-emitting** diodes  
 based on organic-soluble poly (p-phenylenevinylene) derivative carrying  
 both hole-transporting carbazole moiety and 2-ethylhexyloxy  
 group)  
 REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L27 ANSWER 26 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 2001:376192 HCAPLUS  
 DOCUMENT NUMBER: 135:159572  
 TITLE: Comparative studies on EL performances of the  
 OLEDs prepared by PVD, NCBD and ICBD methods  
 AUTHOR(S): Kim, E. S.; Kim, K.; Jin, J.-I.; Choi, J.-H.  
 CORPORATE SOURCE: Department of Chemistry and Center for  
 Electro-and Photo-Responsive Molecules, Korea  
 University, Anam-dong, Seoul, 136-701, S.  
 Korea  
 SOURCE: Synthetic Metals (2001), 121(1-3), 1677-1678  
 CODEN: SYMEDZ; ISSN: 0379-6779  
 PUBLISHER: Elsevier Science S.A.  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB **Organic light emitting diodes (OLEDs)**  
 with the structure of indium-tin-oxide glass/spin-coated  
 poly[2-(N-carbazolyl)-5-(2-ethylhexyloxy)-1,4-phenylenevinylene]/8-  
 hydroxyquinoline aluminum/Li:Al [ITO-glass/CzEH-PPV/Alq3/Li:Al]  
 have been fabricated by applying three deposition methods: phys.  
 vapor deposition (PVD), neutral and ionized cluster beam



depositions (NCBD and ICBD). Atomic force microscopy measurements show that the weakly bound and highly directional cluster beam is effective in producing uniform flat film surfaces. Photo- and **electro-luminescence** spectra demonstrate that the NCBD and PVD methods produce more efficient EL devices and the introduction of neutral buffer layer to the ICBD devices enhances the performances. DCM-doped devices show color-tuning capability and higher external quantum efficiency compared to undoped devices.

IT 352675-59-3  
 (hole-transporting layer; comparative studies on EL performances of OLEDs prepared by PVD, NCBD and ICBD methods)  
 RN 352675-59-3 HCAPLUS  
 CN Poly[[2-(9H-carbazol-9-yl)-5-[(2-ethylhexyl)oxy]-1,4-phenylene]-1,2-ethenediyl] (9CI) (CA INDEX NAME)



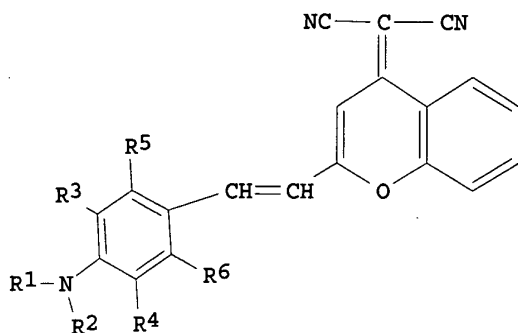
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 66, 76  
 ST org **electroluminescent** device vapor deposition method;  
 OLED phys neutral ionized cluster beam deposition Alq3  
 IT Luminescence, **electroluminescence**  
 (comparative studies on EL performances of OLEDs prepared by PVD, NCBD and ICBD methods)  
 IT **Electroluminescent** devices  
 (organic; comparative studies on EL performances of OLEDs prepared by PVD, NCBD and ICBD methods)  
 IT 352675-59-3  
 (hole-transporting layer; comparative studies on EL performances of OLEDs prepared by PVD, NCBD and ICBD methods)  
 REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L27 ANSWER 27 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 2001:290963 HCAPLUS  
 DOCUMENT NUMBER: 134:318439  
 TITLE: Organic thin film luminescent component and fluorescent material  
 INVENTOR(S): Ito, Yuichi; Shimizu, Shigeji; Sakaki, Yuichi; Yoshida, Hiroshi  
 PATENT ASSIGNEE(S): Toppan Printing Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.

DOCUMENT TYPE: CODEN: JKXXAF  
 LANGUAGE: Patent  
 FAMILY ACC. NUM. COUNT: 1 Japanese  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP, 2001115154	A2	20010424	JP 1999-300875	1999 1022
PRIORITY APPLN. INFO.:			JP 1999-300875	1999 1022

OTHER SOURCE(S): MARPAT 134:318439  
 GI

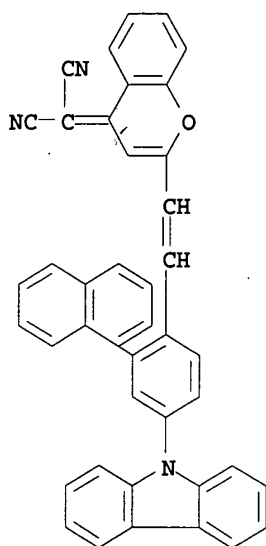


AB The invention refers to a thin film luminescent component containing the fluorescent material I [R1,2 = C1-4 alkyl, Ph, tolyl, naphthyl, or carbon ring, heterocyclic ring, or may combine to form a phenylene, or carbazole; R3,4 = H, Ph, biphenyl or naphthyl; R5,6 = H, Ph, or biphenyl].

IT **334990-94-2P**  
 (organic thin film luminous component and fluorescent material)

RN 334990-94-2 HCAPLUS

CN Propanedinitrile, [2-[2-[4-(9H-carbazol-9-yl)-2-(1-naphthalenyl)phenyl]ethenyl]-4H-1-benzopyran-4-ylidene]- (9CI)  
 (CA INDEX NAME)



IC ICM C09K011-06  
ICS H05B033-14  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
ST fluorescent material **electroluminescent** device  
IT **Electroluminescent** devices  
Fluorescent substances  
(**organic** thin film **luminous** component and fluorescent material)  
IT 190715-20-9P 270923-61-0P 334990-92-0P 334990-93-1P  
334990-94-2P 334990-95-3P 334990-96-4P  
(**organic** thin film **luminous** component and fluorescent material)  
IT 109-77-3, Malononitrile 4181-05-9, 4-Diphenylaminobenzaldehyde  
5751-48-4, 2-Methylchromone  
(**organic** thin film **luminous** component and fluorescent material)  
IT 15058-15-8P  
(**organic** thin film **luminous** component and fluorescent material)

L27 ANSWER 28 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2000:377752 HCAPLUS

DOCUMENT NUMBER: 133:96262

TITLE: Hole transport in substituted polydiphenylacetylene **light-emitting** devices: mobility improvement through carbazole moiety

AUTHOR(S): Sun, R. G.; Wang, Y. Z.; Wang, D. K.; Zheng, Q. B.; Epstein, A. J.

CORPORATE SOURCE: Department of Physics, The Ohio State University, Columbus, OH, 43210-1106, USA

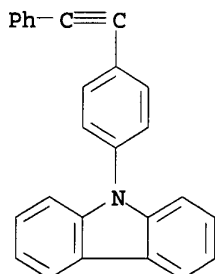
SOURCE: Synthetic Metals (2000), 111-112, 403-408  
CODEN: SYMEDZ; ISSN: 0379-6779

PUBLISHER: Elsevier Science S.A.

DOCUMENT TYPE: Journal

LANGUAGE: English

- AB Carrier-transport control is a critical factor in achieving high performance of organic **light-emitting** devices (LEDs). The authors have compared hole conduction between polydiphenylacetylene (PDPA) derivs. without and with a carrier-transport moiety, such as poly[1-(p-n-butylphenyl)-2-phenylacetylene] (PDPA-Bu) and poly[1-(p-n-carbazolylphenyl)-2-phenylacetylene] (PDPA-Cz), resp. Hole transport was studied by current-voltage measurements and fitted using the space-charge limited current model. The hole mobility can be improved several orders of magnitude by attaching carbazolyl side groups to the PDPA back bone (PDPA-Cz), as compared to that of PDPA-Bu. The **electroluminescence** was studied and compared in heterostructured LEDs using PDPA-Bu and PDPA-Cz as hole-transport layers. Carrier transport and balance have significant roles in the performance of the substituted PDPA-based **electroluminescent** devices.
- IT 167697-14-5  
(hole transport and mobility in substituted polydiphenylacetylene **light-emitting** devices)
- RN 167697-14-5 HCAPLUS
- CN 9H-Carbazole, 9-[4-(phenylethynyl)phenyl]-, homopolymer (9CI) (CA INDEX NAME)
- CM 1
- CRN 167697-13-4
- CMF C26 H17 N



- CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 36, 76
- IT **Electroluminescent** devices  
(hole transport and mobility in substituted polydiphenylacetylene **light-emitting** devices)
- IT Electric current-potential relationship  
Luminescence  
UV and visible spectra  
(hole transport and mobility in substituted polydiphenylacetylene **light-emitting** devices and polymer optical properties)
- IT Electric current carriers  
(mobility; hole transport and mobility in substituted polydiphenylacetylene **light-emitting** devices and polymer optical properties)
- IT Hole (electron)

(transport of; hole transport and mobility in substituted polydiphenylacetylene **light-emitting** devices and polymer optical properties)

IT 7440-57-5, Gold, uses 12798-95-7 50926-11-9, Indium tin oxide (hole transport and mobility in substituted polydiphenylacetylene **light-emitting** devices)

IT 157673-32-0 **167697-14-5** (hole transport and mobility in substituted polydiphenylacetylene **light-emitting** devices)

IT 2085-33-8, Aluminum tris(8-hydroxyquinolino) (hole transport and mobility in substituted polydiphenylacetylene **light-emitting** devices)

IT 7631-86-9, Silica, uses (quartz; hole transport and mobility in substituted polydiphenylacetylene **light-emitting** devices)

REFERENCE COUNT: 31 THERE ARE 31 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 29 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2000:74292 HCAPLUS

DOCUMENT NUMBER: 132:214195

TITLE: High luminescent efficiency in **light-emitting** polymers due to effective exciton confinement

AUTHOR(S): Sun, R. G.; Wang, Y. Z.; Wang, D. K.; Zheng, Q. B.; Kylo, E. M.; Gustafson, T. L.; Epstein, A. J.

CORPORATE SOURCE: Department of Physics, The Ohio State University, Columbus, OH, 43210-1106, USA

SOURCE: Applied Physics Letters (2000), 76(5), 634-636  
CODEN: APPLAB; ISSN: 0003-6951

PUBLISHER: American Institute of Physics

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Highly efficient **light-emitting** polymers have become possible by mol. engineering. Photoluminescence (PL) quantum yield >90% in the solid state is reported for the alternating block copolymer of distyrylbenzene. The alternate arrangement of conjugated and nonconjugated segments with surrounding side groups for chromophores effectively confine the excitons for radiative emission. The effectiveness of the exciton confinement is confirmed through the temperature independence of the PL quantum yield. The time-resolved PL decay measurement supports this model through the independence of the PL yield on temperature and emission wavelength. The synthesized copolymers were employed for the fabrication of **electroluminescent** (EL) devices, demonstrating high external EL efficiency with low operation threshold.

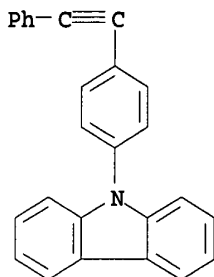
IT **167697-14-5** (high luminescent efficiency in **light-emitting** polymers due to effective exciton confinement)

RN 167697-14-5 HCAPLUS

CN 9H-Carbazole, 9-[4-(phenylethynyl)phenyl]-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 167697-13-4  
CMF C26 H17 N



CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 36  
ST luminescence **light emitting** polymer exciton confinement  
IT **Electroluminescent** devices  
Exciton  
Luminescence  
Luminescence, **electroluminescence**  
Radiative transition  
Size effect  
(high luminescent efficiency in **light-emitting** polymers due to effective exciton confinement)  
IT 2085-33-8, Aluminum tris(8-hydroxyquinolinato) 37271-44-6  
50926-11-9, Indium tin oxide  
(high luminescent efficiency in **light-emitting** polymers due to effective exciton confinement)  
IT 167697-14-5 219144-52-2  
(high luminescent efficiency in **light-emitting** polymers due to effective exciton confinement)  
REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 30 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN  
ACCESSION NUMBER: 1999:756830 HCAPLUS  
DOCUMENT NUMBER: 132:7426  
TITLE: Multilayer organic **electroluminescent** devices using carbazole derivatives and their manufacture  
INVENTOR(S): Nakaya, Tadao; Yamauchi, Takao; Konishi, Takanori  
PATENT ASSIGNEE(S): Taiho Kogyo Co., Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 32 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----

USHA SHRESTHA EIC 1700 REM 4B28

JP 11329737

A2

19991130

JP 1998-260328

1998

0914

PRIORITY APPLN. INFO.:

JP 1998-63370

A

1998

0313

AB The devices have hole-transporting layers containing compds. having 9-carbazolyl groups. Preparation methods of the carbazole derivs. by using (A) biphenyl, (B) 4,4'-diiodobiphenyl, (C) 4-iodoaniline, (D) carbazole, or (E) 4-iodoacetophenone as starting materials are claimed. The devices show improved lifetime and high luminance.

IT 251319-13-8P

(manufacture of carbazole derivs. for hole-transporting layers of multilayer **electroluminescent** devices)

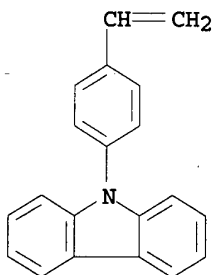
RN 251319-13-8 HCAPLUS

CN 9H-Carbazole, 9-(4-ethenylphenyl)-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 52913-19-6

CMF C20.H15.N

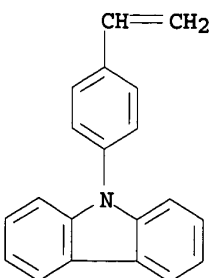


IT 52913-19-6P

(manufacture of carbazole derivs. for hole-transporting layers of multilayer **electroluminescent** devices)

RN 52913-19-6 HCAPLUS

CN 9H-Carbazole, 9-(4-ethenylphenyl)- (9CI) (CA INDEX NAME)



IC ICM H05B033-22

ICS C09K011-06; C07D209-82

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related

Properties)  
 Section cross-reference(s): 27, 28, 38  
 ST carbazole hole transporting layer **electroluminescent** device  
 IT **Electroluminescent** devices  
     (manufacture of carbazole derivs. for hole-transporting layers of multilayer **electroluminescent** devices)  
 IT 57102-51-9P 57102-52-0P 57102-62-2P 116292-11-6P  
 212385-49-4P 212385-74-5P 212385-75-6P 251316-77-5P  
 251316-79-7P 251316-80-0P 251316-83-3P 251316-85-5P  
 251316-89-9P **251319-13-8P**  
     (manufacture of carbazole derivs. for hole-transporting layers of multilayer **electroluminescent** devices)  
 IT 1601-97-4P, 4,4'-Diiodoazobenzene 1984-49-2P,  
 3,3'-Bi-9H-carbazole 29170-08-9P, 4-Iodo-4'-nitrobiphenyl  
**52913-19-6P** 53207-29-7P 207447-26-5P 207447-27-6P  
 251311-77-0P 251319-37-6P  
     (manufacture of carbazole derivs. for hole-transporting layers of multilayer **electroluminescent** devices)  
 IT 86-74-8, Carbazole 90-30-2, N-Phenyl-1-naphthylamine 92-52-4,  
 Biphenyl, reactions 135-88-6, N-Phenyl-2-naphthylamine  
 302-01-2, Hydrazine, reactions 540-37-4, p-Iodoaniline  
 591-50-4, Iodobenzene 3001-15-8, 4,4'-Diiodobiphenyl  
 4214-28-2, 4-Iodo-m-xylene 13329-40-3, 4-Iodoacetophenone  
     (manufacture of carbazole derivs. for hole-transporting layers of multilayer **electroluminescent** devices)

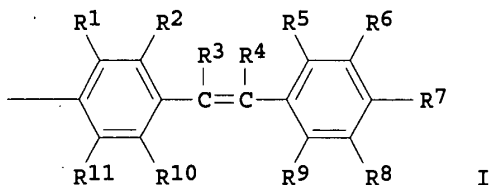
L27 ANSWER 31 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 1999:189076 HCAPLUS  
 DOCUMENT NUMBER: 130:259332  
 TITLE: Organic **electroluminescent** device  
 INVENTOR(S): Ishikawa, Hitoshi; Higashiguchi, Itaru; Oda, Atsushi  
 PATENT ASSIGNEE(S): NEC Corp., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 30 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
JP 11074079	A2	19990316	JP 1998-148778	1998 0529
US 6468675	B1	20021022	US 1999-321315	1999 0527
JP 2001126873	A2	20010511	JP 2000-274556	2000 0911
JP 3636649	B2	20050406		
PRIORITY APPLN. INFO.:			JP 1997-163586	A 1997 0620
			JP 1998-148778	A 1998



0529

OTHER SOURCE(S): MARPAT 130:259332  
GI



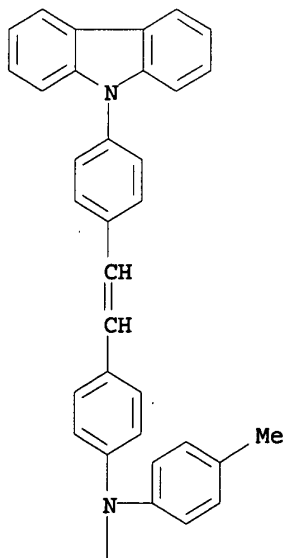
AB An organic **electroluminescent** device comprises diphenylaminoarylene represented by Ar2Ar3NAr1NAr4Ar5 [ Ar1 = C5-30 arylene; Ar2-5 = C6-20 aryl groups including at least one styryl group represented by I; R1-11 = H, halo, OH, etc.], and triphenylamine represented by (R14Ar6) (R15Ar7) (R16Ar8)N [Ar6-8 = C6-30 arylene; R14-16 = H, halo, OH, etc.] as a hole transporting material.

IT 221453-53-8  
(organic **electroluminescent** device)

RN 221453-53-8 HCAPLUS

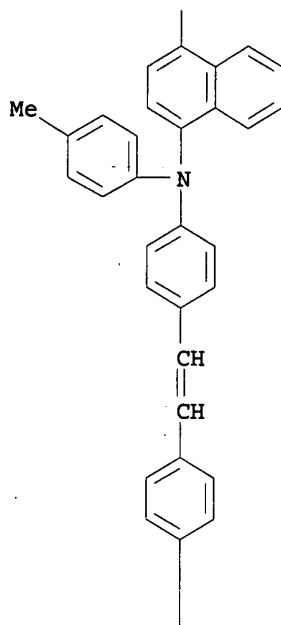
CN 1,4-Naphthalenediamine, N,N'-bis[4-[2-[4-(9H-carbazol-9-yl)phenyl]ethenyl]phenyl]-N,N'-bis(4-methylphenyl)- (9CI) (CA INDEX NAME)

PAGE 1-A

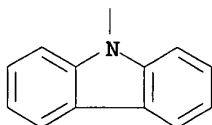


USHA SHRESTHA EIC 1700 REM 4B28

PAGE 2-A



PAGE 3-A



IC ICM H05B033-14  
 ICS C09K011-06; H05B033-22  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 ST org **electroluminescent** device diphenylaminoarylene triphenylamine  
 IT **Electroluminescent** devices  
     (org **electroluminescent** device)  
 IT 105389-36-4 181367-06-6 181367-28-2 199868-25-2  
 213675-16-2 221453-31-2 221453-32-3 221453-33-4  
 221453-34-5 221453-35-6 221453-36-7 221453-37-8  
 221453-38-9 221453-39-0 221453-40-3 221453-41-4  
 221453-42-5 221453-43-6 221453-44-7 221453-45-8  
 221453-46-9 221453-47-0 221453-48-1 221453-49-2  
 221453-50-5 221453-51-6 221453-52-7 **221453-53-8**  
 221453-54-9 221453-55-0 221453-56-1  
     (org **electroluminescent** device)

L27 ANSWER 32 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 1999:111658 HCAPLUS  
 DOCUMENT NUMBER: 130:202697

USHA SHRESTHA EIC 1700 REM 4B28

TITLE: Organic **electroluminescent** device  
used as planar light source in optical  
displays

INVENTOR(S): Okutsu, Akira; Tamano, Michiko; Onikubo,  
Shunichi; Enokida, Toshio

PATENT ASSIGNEE(S): Toyo Ink Mfg. Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 27 pp.  
CODEN: JKXXAF

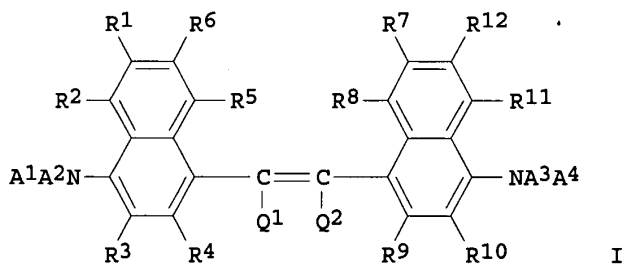
DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
JP 11040359	A2	19990212	JP 1997-195294	1997 0722
PRIORITY APPLN. INFO.:			JP 1997-195294	1997 0722
OTHER SOURCE(S):			MARPAT 130:202697	
GI				

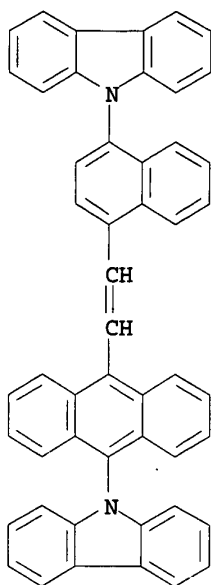


AB An organic **electroluminescent** device with high intensity and long operation life, comprises a **light emitting** layer containing a substance represented by I [A1-4 = alkyl, monocyclic, condensed polycyclic, etc.; Q1-2 = H, CN, alkyl, etc.; R1-12 = H, halo, CN, NO2, etc.] and an electron injection/transporting layer containing a substance represented by 1X2XLGe [X1-2 = hydroxyquinoline, and hydroxybenzoquinoline derivs.; L = halo, alkyl, monocyclic, etc.].

IT **220720-17-2**  
(organic **electroluminescent** device used as planar light source in optical displays)

RN **220720-17-2** HCAPLUS

CN **9H-Carbazole, 9-[4-[2-[10-(9H-carbazol-9-yl)-9-anthracenyl]ethenyl]-1-naphthalenyl]- (9CI) (CA INDEX NAME)**

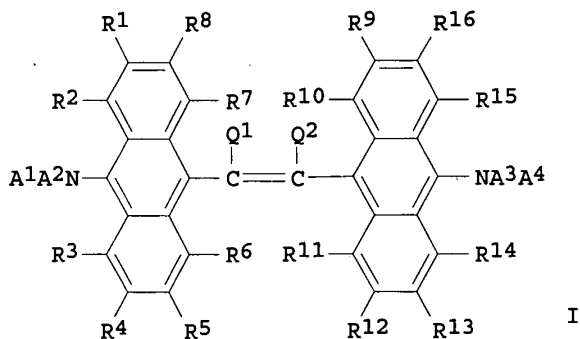


IC ICM H05B033-14  
 ICS C09K011-06; H05B033-22  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 ST org **electroluminescent** device  
 IT **Electroluminescent** devices  
 (organic **electroluminescent** device used as planar light source in optical displays)  
 IT 2085-33-8, Al 8q 15082-28-7 62896-28-0 65181-78-4, TPD  
 123847-85-8, 4,4'-Bis{N-(1-naphthyl)-N-phenylamino}biphenyl  
 124729-98-2, 4,4',4''-Tris [N-(3-methylphenyl)-N-phenylamino]triphenylamine 151026-65-2, N,N'-(4-Methylphenyl)-N,N'-(4-n-butylphenyl)-phenanthrene-9,10-diamine 177799-11-0  
 177799-15-4 188049-36-7 194794-43-9 219638-64-9  
 220720-15-0 220720-16-1 **220720-17-2** 220720-18-3  
 220720-19-4 220720-20-7 220720-21-8 220720-22-9  
 220720-23-0 220720-24-1 220720-25-2 220720-26-3  
 220720-27-4 220720-28-5 220720-29-6 220720-31-0  
 220720-33-2 220720-34-3 220720-35-4 220720-36-5  
 220720-37-6 220720-38-7 220720-39-8  
 (organic **electroluminescent** device used as planar light source in optical displays)  
 L27 ANSWER 33 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 1999:35313 HCAPLUS  
 DOCUMENT NUMBER: 130:145976  
 TITLE: Organic **electroluminescent** material containing anthracene derivative  
 INVENTOR(S): Okutsu, Satoshi; Tamano, Michiko; Onikubo, Shunichi; Enokida, Toshio  
 PATENT ASSIGNEE(S): Toyo Ink Mfg. Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 36 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
JP 11008068	A2	19990112	JP 1997-161418	1997 0618
JP 3591226	B2	20041117		
PRIORITY APPLN. INFO.:			JP 1997-161418	1997 0618

OTHER SOURCE(S): MARPAT 130:145976  
GI



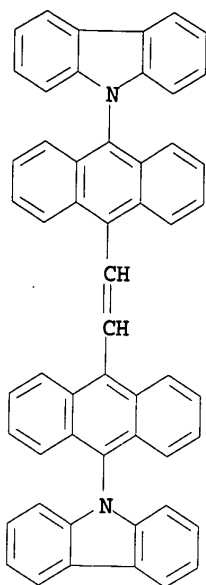
AB The material, suited for use in an **electroluminescent** device, contains an anthracene derivative I (A1-4 = alkyl, single ring, condensed ring; A1 and A2 and/or A3 and A4 may bond to form a condensed ring; Q1, 2 = H, cyano, alkyl, single ring, condensed ring; R1-16 = H, halogen, cyano, NO2, alkyl, alkoxy, aryloxy, alkylthio, arylthio, single ring, condensed ring, NH2, alkylamino, arylamino). The device shows high luminance and efficiency.

IT 220071-97-6 220072-32-2

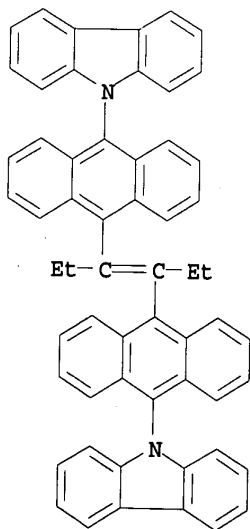
(organic **electroluminescent** device containing anthracene derivative)

RN 220071-97-6 HCAPLUS

CN 9H-Carbazole, 9,9'-(1,2-ethenediyl)-10,9-anthracenediyl)bis-(9CI) (CA INDEX NAME)



RN 220072-32-2 HCAPLUS  
 CN 9H-Carbazole, 9,9'-[(1,2-dienyl)di-10,9-anthracenediyl]bis- (9CI) (CA INDEX NAME)



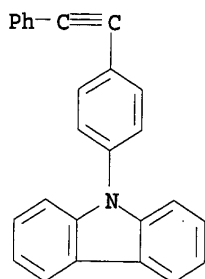
IC ICM H05B033-14  
 ICS C09K011-06; H05B033-22  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 ST electroluminescent org device anthracene deriv  
 IT Electroluminescent devices  
 (organic electroluminescent device containing anthracene derivative)

IT 220071-88-5 220071-89-6 220071-90-9 220071-91-0  
 220071-92-1 220071-93-2 220071-94-3 220071-95-4  
**220071-97-6** 220071-98-7 220072-00-4 220072-01-5  
 220072-02-6 220072-03-7 220072-04-8 220072-05-9  
 220072-06-0 220072-07-1 220072-08-2 220072-09-3  
 220072-10-6 220072-11-7 220072-12-8 220072-13-9  
 220072-15-1 220072-16-2 220072-17-3 220072-18-4  
 220072-19-5 220072-21-9 220072-22-0 220072-23-1  
 220072-24-2 220072-25-3 220072-27-5 220072-29-7  
**220072-32-2**  
 (organic **electroluminescent** device containing anthracene derivative)  
 IT 220072-34-4  
 (organic **electroluminescent** device containing anthracene derivative)

L27 ANSWER 34 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 1998:640065 HCAPLUS  
 DOCUMENT NUMBER: 130:102355  
 TITLE: Efficient green **electroluminescent** cells using a poly(p-phenylene vinylene) multiblock copolymer sandwiched between carrier-transporting layers  
 AUTHOR(S): Zheng, Qianbing; Sun, Runguang; Kobayashi, Takayoshi; Hong, Zhiyong; Wang, Daike; Jing, Xiabin; Wang, Fosong; Minami, Nobutsugu; Yase, Kiyoshi; Masuda, Toshio  
 CORPORATE SOURCE: Dep. Phys., Grad. Sch. of Sci., The University of Tokyo, Bunkyo-ku, Tokyo, 113, Japan  
 SOURCE: Synthetic Metals (1998), 97(1), 13-15  
 CODEN: SYMEDZ; ISSN: 0379-6779  
 PUBLISHER: Elsevier Science S.A.  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB With a newly synthesized poly(p-phenylene vinylene) (PPV) multiblock copolymer used in a triple-layer structure, efficient green **light-emitting** diodes with low driving voltage were fabricated. The devices are turned on at 2.5 V, the brightness at 5 V is >100 cd/m<sup>2</sup> and at 7 V is .apprx.1650 cd/m<sup>2</sup>, with an external quantum efficiency of .apprx.1%.  
 IT **167697-14-5**  
 (efficient green **electroluminescent** cells using a poly(p-phenylene vinylene) multiblock copolymer sandwiched between carrier-transporting layers and copolymer properties)  
 RN 167697-14-5 HCAPLUS  
 CN 9H-Carbazole, 9-[4-(phenylethynyl)phenyl]-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 167697-13-4  
 CMF C26 H17 N



- CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 38
- ST **electroluminescent** cell polyphenylene vinylene  
multiblock copolymer; sandwiched polymer carrier transporting  
layer LED
- IT **Electroluminescent** devices  
Luminescence  
Luminescence, **electroluminescence**  
UV and visible spectra  
(efficient green **electroluminescent** cells using a  
poly(p-phenylene vinylene) multiblock copolymer sandwiched  
between carrier-transporting layers and copolymer properties)
- IT 7631-86-9, Silica, uses 37271-44-6 50926-11-9, Indium tin  
oxide  
(efficient green **electroluminescent** cells using a  
poly(p-phenylene vinylene) multiblock copolymer sandwiched  
between carrier-transporting layers and copolymer properties)
- IT 2085-33-8, Aluminum tris(8-hydroxyquinolinato) **167697-14-5**  
219144-52-2  
(efficient green **electroluminescent** cells using a  
poly(p-phenylene vinylene) multiblock copolymer sandwiched  
between carrier-transporting layers and copolymer properties)
- REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L27 ANSWER 35 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN  
ACCESSION NUMBER: 1998:52289 HCAPLUS  
DOCUMENT NUMBER: 128:173554  
TITLE: Conducting polymer-C60 heterojunctions:  
polarity-independent  
**electroluminescent** cells

AUTHOR(S): Zheng, Qianbing; Sun, Runguang; Zhang,  
Xianmin; Masuda, Toshio; Kobayashi, Takayoshi

CORPORATE SOURCE: Dep. Physics, Graduate School Sci., Univ.  
Tokyo, Tokyo, 113, Japan

SOURCE: Japanese Journal of Applied Physics, Part 2:  
Letters (1997), 36(12B), L1675-L1677  
CODEN: JAPL D8; ISSN: 0021-4922

PUBLISHER: Japanese Journal of Applied Physics

DOCUMENT TYPE: Journal

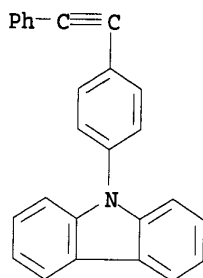
LANGUAGE: English

AB The characterization of polarity-independent  
**electroluminescent** cells based on the heterostructure of a  
conducting polymer, a soluble para carbazolyl substituted  
poly(diphenylacetylene) (PDPA-Cz), and buckminsterfullerene, C60,



is reported. The operation of the devices under reverse direct-current (d.c.) bias is discussed in terms of interfacial charge transfer between PDPA-Cz and C60.

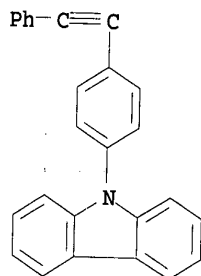
IT 167697-14-5  
(conducting polymer-C60 heterojunctions as polarity-independent **electroluminescent** cells)  
RN 167697-14-5 HCAPLUS  
CN 9H-Carbazole, 9-[4-(phenylethynyl)phenyl]-, homopolymer (9CI) (CA INDEX NAME)  
CM 1  
CRN 167697-13-4  
CMF C26 H17 N



CC 73-5. (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
ST conducting polymer fullerene heterojunction **electroluminescent** cell  
IT Band structure  
Electroluminescent devices  
Semiconductor heterojunctions  
(conducting polymer-C60 heterojunctions as polarity-independent **electroluminescent** cells)  
IT Polymers, properties  
(conducting; conducting polymer-C60 heterojunctions as polarity-independent **electroluminescent** cells)  
IT Electron transfer  
(interfacial; conducting polymer-C60 heterojunctions as polarity-independent **electroluminescent** cells)  
IT 99685-96-8, Fullerene c60 167697-14-5  
(conducting polymer-C60 heterojunctions as polarity-independent **electroluminescent** cells)  
REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 36 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN  
ACCESSION NUMBER: 1997:769789 HCAPLUS  
DOCUMENT NUMBER: 128:82060  
TITLE: **Electroluminescent** devices based on poly(diphenylacetylene) with carbazolyl side groups  
AUTHOR(S): Zheng, Qianbing; Sun, Runguang; Zhang, Xianmin; Masuda, Toshio; Kobayashi, Takayoshi  
CORPORATE SOURCE: Department Physics, Graduate School Science, University Tokyo, Tokyo, 113, Japan

SOURCE: Japanese Journal of Applied Physics, Part 2:  
Letters (1997), 36(11B), L1508-L1510  
CODEN: JAPLD8; ISSN: 0021-4922  
PUBLISHER: Japanese Journal of Applied Physics  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
AB External quantum efficiency of **electroluminescent**  
devices with a heterostructure using carbazolyl-substituted  
poly(diphenylacetylene) (PDPA-Cz) as a hole-transporting layer was  
as high as 2%.  
IT 167697-14-5  
(**electroluminescent** devices based on  
poly(diphenylacetylene) with carbazolyl side groups)  
RN 167697-14-5 HCAPLUS  
CN 9H-Carbazole, 9-[4-(phenylethynyl)phenyl]-, homopolymer (9CI) (CA  
INDEX NAME)  
CM 1  
CRN 167697-13-4  
CMF C26 H17 N



CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)  
ST diphenylacetylene carbazolyl substituted polymer  
**electroluminescent** device  
IT **Electroluminescent** devices  
(**electroluminescent** devices based on  
poly(diphenylacetylene) with carbazolyl side groups)  
IT Polyacetylenes, uses  
(**electroluminescent** devices based on  
poly(diphenylacetylene) with carbazolyl side groups)  
IT 7429-90-5, Aluminum, uses 25067-59-8, Poly(N-vinylcarbazole)  
50926-11-9, ITO 157673-32-0 167697-14-5  
(**electroluminescent** devices based on  
poly(diphenylacetylene) with carbazolyl side groups)  
IT 2085-33-8  
(hole-transport; **electroluminescent** devices based on  
poly(diphenylacetylene) with carbazolyl side groups)  
REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT